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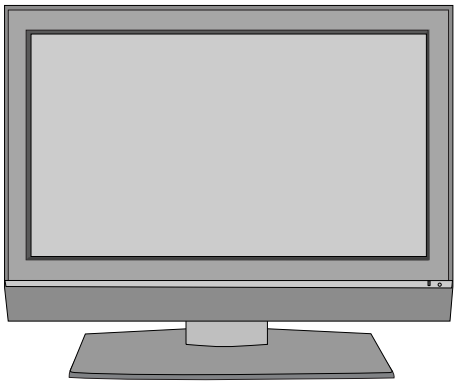
PLASMA TV
MANUAL DE SERVICIO

CHASIS : PP81D

MODELO : 32PC5RA 32PC5RA-MF

ATENCIÓN

Antes de dar servicio al chasis, lea las PRECAUCIONES DE SEGURIDAD en este manual.



CONTENIDO

PRECAUCIONES DE SEGURIDAD

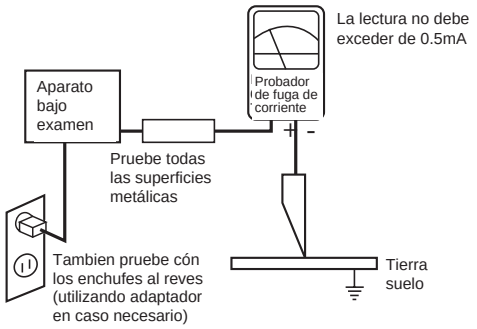
ADVERTENCIA: Antes de dar servicio a este chasis, lea "PRECAUCIONES RESPECTO A RADIACION POR RAYOS X", "INSTRUCCIONES DE SEGURIDAD" y "AVISO SOBRE SEGURIDAD DE PRODUCTOS"

INSTRUCCIONES DE SEGURIDAD

1. Cuando el receptor está en operación, se producen voltajes potencialmente tan altos como 25,000-29,000 voltios. Operar el receptor fuera de su gabinete o con la tapa trasera removida puede causar peligro de choque eléctrico.
   (1) Nadie debe intentar dar servicio si no está debidamente familiarizado con las precauciones que son necesarias cuando se trabaja con un equipo de alto voltaje.
   (2) Siempre descargue el ánodo del tubo de la imagen a tierra para evitar el riesgo de choque eléctrico antes de remover la tapa del ánodo.
   (3) Descargue completamente el alto potencial del tubo de imagen antes de manipularlo. El tubo de la imagen es de alto vacío y, si se rompe, los fragmentos de vidrio salen despedidos violentamente.
2. Si se quemara algún fusible de este receptor de televisión, reemplácelo con otro especificado en la lista de partes.
3. Cuando reemplace tableros o plaquetas de circuitos, cuidadosamente enrolle sus alambres alrededor de las terminales antes de soldar.
4. Cuando reemplace un resistencia de vataje (resistor de película de óxido metálico) en el Tablero o Plaqueta de circuitos, mantenga la resistencia a un mínimo de 10mm de distancia.
5. Mantenga los alambres lejos de componentes de alto voltaje o de alta temperatura.
6. Este receptor de televisión debe conectarse a una fuente de 100 a 240 V AC.
7. Antes de devolver este aparato al cliente, haga una verificación de fuga de corriente sobre las partes metálicas del gabinete expuestas, tales como antenas, terminales, cabezas de tornillos, tapas de metal, palancas de control etc., para estar seguro de que el equipo funciona sin peligro de choque eléctrico. Enchufe el cordón directamente al tomacorriente de la línea de AC 100-240V.

No utilice una línea aislada de transformador durante esta verificación. Use un voltímetro de 1000 Ohmios por voltio de sensibilidad o más, en la forma que se describe a continuación.

Cuando la unidad está ya conectada a la AC, pulse el conmutador primero poniéndolo en "ON" (encendiendo) y luego en "OFF" (apagando), mida desde un punto de tierra conocido, tal como una (cañería de metal, una manija metálica, una tubería etc.) a todas las partes metálicas expuestas del receptor de televisión (antenas, manijas de metal, gabinetes de metal, cubiertas de metal, palancas de control etc.,) especialmente cualquiera de las partes metálicas expuestas que puedan ofrecer un camino hacia el chasis. Ninguna medición de corriente eléctrica debe exceder de 0.5 miliamperios. Repita la prueba cambiando la posición del enchufe en el tomacorriente. Cualquier medición que no esté dentro de los límites especificados aquí representan un riesgo potencial de choque eléctrico que debe ser eliminado antes de devolver el equipo al cliente.



AVISO SOBRE SEGURIDAD DE PRODUCTOS

Muchas de las partes, electricas y mecánicas en este chasis tienen caracteristicas relacionadas con la seguridad. Estas caracteristicas frecuentemente pasan desapercibidas en las inspecciones visuales y la proteccion que proporcionan contra la RADIACION DE RAYOS-X no siempre necesariamente se obtiene al mismo grado cuando se reemplazan piezas o componentes diseñados para voltajes o vatajes mayores, etc. Las piezas que tienen estas caracteristicas de seguridad se identifican por la marca ⚠ impresa sobre el diagrama esquematico. Antes de reemplazar alguno de esos componente, lea cuidadosamente la lista de este manual. El uso de partes de reemplazo que no tengan las mismas caracteristicas de seguridad, como se especifica en la lista de partes, puede crear Radiacion de Rayos-X.

ESPECIFICACIONES

NOTE : Specifications and others are subject to change without notice for improvement.

v Application Range

This spec sheet is applied to PDP TV used PP81D Chassis.

Chassis	Model Name	Market	Brand	Remark
PP81D	32PC5RA-TD	NON EU	LG	
	32PC5RA-MF	Central and South America		
	32PC53-ZB	EU		
	32PC54-ZD	EU		

v Specification

Each part is tested as below without special appointment.

1) Temperature : 25±5°C (77±9°F), CST : 40±5
2) Relative Humidity: 65±10%
3) Power Voltage: Standard Input voltage (100-240V~, 50/60Hz)
   * Standard Voltage of each product is marked by models.
4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with SBOM.
5) The receiver must be operated for about 20 minutes prior to the adjustment.

v Test Method

1) Performance : LGE TV test method followed.
2) Demanded other specification
   Safety : CE, IEC specification
   EMC : CE, IEC

Model	Market	Appliance	Remark
32PC53-ZB 32PC54-ZD	EU	Safety : IEC/EN60065 EMI : EN55013 EMS : EN55020	TEST
32PC5RA-TD 32PC5RA-MF	NON -EU Central and South America	Safety : IEC/EN60065 EMI : CISPR13	TEST

v Module General Specification(32” WVGA PDP Module)

No	Item	Specification	Remark
1	Display Screen Device	32 inch 16:9 Color Plasma Display Module	PDP
2	Aspect Ratio	16:9	
3	PDP Module	PDP32F#####, RGB Closed(Well) Type	Glass Filter
4	Operating Environment	1) Temp. : 0 ~ 60 deg 2) Humidity : 20 ~ 80 %	LGE SPEC.
5	Storage Environment	3) Temp. : -20 ~ 60 deg 4) Humidity : 10 ~ 90 %	
6	Input Voltage	AC 100-240V~, 50/60Hz	Maker: Sanken

v Model General Specification

(1) EU Spec.(ZA/ZB/ZD)

No	Item	Specification		Remark	
1	Market	EU			
2	Broadcasting system	PAL BG/I/DK, SECAM		SECAM-L spec out	
3	Available Channel	BAND	PAL		
		VHF/UHF	C1 ~ C69		
		CATV	S1 ~ S47		
4	Receiving system	Upper Heterodyne			
5	SCART Input(2EA)	PAL		Full Scart 1EA, Harf 1EA	
6	Video Input (1EA)	PAL		Side AV(Except 32PC models)	
7	S-Video Input (1EA)	PAL		Side AV(Except 32PC models)	S-Video Priority
8	Component Input (1EA)	Y/Cb/Cr, Y/Pb/Pr			
9	RGB Input(1EA)	RGB-PC			
10	HDMI 1EA	HDMI-DTV		REAR HDMI(Only 42/50PG100R-ZA)	
	Input 2EA			REAR HDMI(Only 42/50PG200R-ZA (32PC53-ZB, 32PC54-ZD)	
11	Audio Input (5EA)	PC Audio, AV(3EA), Component(1EA)		L/R Input(PC 1EA, SCART 2EA, SIDE AV 1EA, Component 1EA) (32PC models dosen't have SIDE AV)	
12	USB Input(1EA)	Divx, MP3, JPEG		SIDE USB: only for 42/50PG600R-ZA	

(2) NON-EU Spec.(TA/TD)

No	Item		Specification			Remark		
1	Market		NON EU/CHINA					
2	Broadcasting system		PAL/SECAM/BG/I/DK, NTSC-M					
3	Available Channel		BAND	PAL	NTSC		China(DK)	Australia(BG)
			VHF/UHF	E2 ~ C69	2 ~ 78	VHF/UHF	C1 ~ C62	C1 ~ C75
			CATV	S21 ~ S47	1 ~ 71	CATV	S1 ~ S41	S2 ~ S44
4	Receiving system		Upper Heterodyne					
5	Video Input(2EA)		PAL, SECAM, NTSC			Rear 1EA, Side 1EA(Except 32PC5RA)		
6	AV Output (1EA)		PAL, SECAM, NTSC			Rear 1EA		
7	S-Video Input (1EA)		PAL, SECAM, NTSC			Side(Except 32PC5RA)	S-video Priority	
8	Component Input (2EA)		Y/Cb/Cr, Y/Pb/Pr					
9	RGB Input(1EA)		RGB-PC, S/W Upgrade					
10	HDMI Input	2EA	HDMI-DTV, Only PCM MODE			REAR HDMI(2)		
		3EA				SIDE HDMI(1), REAR HDMI(2) : Only for 42/50PG60UR-TA, 50/60PG70FR-TB, 50PG30FR-TB		
11	Audio Input (5EA)		PC Audio, Component(2EA), AV(2EA),			L/R Input(PC 1EA, Component 2EA, Rear 1EA, Side 1EA(Except 32PC5RA))		
12	RS-232C(1EA)		Remote Control					
13	USB Input(1EA)		Divx, MP3, JPEG			SIDE USB: only for 42/50PG60UR-TA		

(3) Central and South America Spec.(MA/MB/MF)

No	Item		Specification		Remark	
1	Market		Central and South America			
2	Broadcasting system		NTSC, PAL-M, PAL-N			
3	Available Channel		BAND	NTSC		
			VHF	2 ~ 13		
			UHF	14 ~ 69		
			CATV	1 ~ 125		
4	Receiving system		Upper Heterodyne			
5	Video Input(2EA)		NTSC, PAL-M/N		Rear 1EA, Side 1EA(Except 32PC5RA)	
6	AV Output (1EA)		NTSC, PAL-M/N		Rear 1EA	
7	S-Video Input (1EA)		NTSC, PAL-M/N		Side(Except 32PC5RA)	S-video Priority
8	Component Input (2EA)		Y/Cb/Cr, Y/Pb/Pr			
9	RGB Input(1EA)		RGB-PC, S/W Upgrade			
10	HDMI Input	2EA	HDMI-DTV, Only PCM MODE		REAR HDMI(2)	
		3EA			SIDE HDMI(1), REAR HDMI(2) : Only for 42/50PG60UR-MA, 50/60PG70FR-MB	
11	Audio Input (5EA)		PC Audio, Component(2EA), AV(2EA),		L/R Input(PC 1EA, Component 2EA, Rear 1EA, Side 1EA(Except 32PC5RA))	
12	RS-232C(1EA)		Remote Control			

INSTRUCCIONES DE AJUSTE

1. Application Range

This spec. sheet is applied to all of the PP81D Chassis.

2. Specification

(1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
(2) Adjustment must be done in the correct order.
(3) The adjustment must be performed in the circumstance of 25±5℃ of temperature and 65±10% of relative humidity if there is no specific designation.
(4) The input voltage of the receiver must keep 100~240V, 50/60Hz.
(5) Before adjustment, execute Heat-Run for 30 minutes at RF no signal.

3. ADC calibration

	Component	RGB
MSPG-925FA	Model : 216 (720P@60Hz)	Model : 60 (1024X768@60Hz)

3-1. PC input ADC

(1) Auto RGB Gain/Offset Adjustment

1) Convert to PC in Input-source
2) Signal equipment displays
Output Voltage : 700 mVp-p
Impress Resolution XGA (1024 x 768 @ 60Hz)
Model : 60 in Pattern Generator
(1024 x 768 @ 60Hz Black and White Pattern)
Pattern : 54 in Pattern Generator (MSPG-925 SERISE)
[1/2 Black & White Pattern (Refer below picture)].

<Fig. 1> Adjustment pattern(RGB PC)

3) Adjust by commanding AUTO_COLOR_ADJUST(0xF1) 0x00 0x02 instruction.

(2) Confirmation

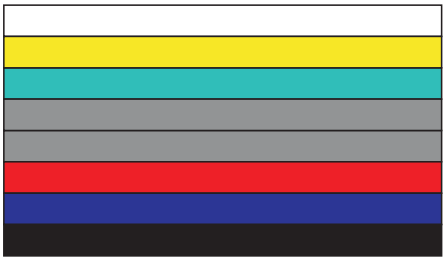
1) We confirm whether “0xF1(offset), 0xF2(gain)” address of EEPROM “0xBC” is “0xAA” or not.
2) If “0xF1”, “0xF2” address of EEPROM “0xBC” isn’t “0xAA”, we adjust once more
3) We can confirm the ADC values from “0x00~0x05” addresses in a page “0xBC”

[Manual ADC process using Service Remocon. After enter Service Mode by pushing “ADJ” key, execute “Auto-RGB” by pushing “G” key at “Auto-RGB”.

3-2. COMPONENT input ADC

(1) Component Gain/Offset Adjustment

1) Convert to Component in Input-source
2) Signal equipment displays
Impress Resolution 720P
MODEL : 217 in Pattern Generator(720P/60Hz 100% Color Bar Mode)
PATTERN : 65 in Pattern Generator(MSPG-925 SERISE)



Adjustment pattern (COMPONENT)

3) Adjust by commanding AUTO_COLOR_ADJUST(0xF1) 0x00 0x02 instruction

(2) Confirmation

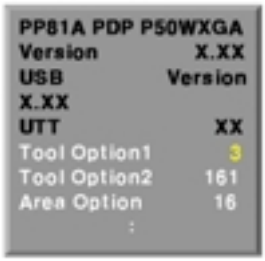
1) We confirm whether “0xF3(offset), 0xF4(gain)” address of EEPROM “0xBC” is “0xAA” or not.
2) If “0xF3”, “0xF4” address of EEPROM “0xBC” isn’t “0xAA”, we adjust once more
3) We can confirm the ADC values from “0x06~0x0B” addresses in a page “0xBC”

[Manual ADC process using Service Remocon. After enter Service Mode by pushing “ADJ” key, execute “Auto-RGB” by pushing “G” key at “Auto-RGB”.

4. PCB Assembly Adjustment Items

4-1. Option Adjustment Following BOM

Tool Option1
Tool Option2
Area Option



<Fig. 2>

* Profile: Must be changed the option value because being different with some setting value depend on module, inch and market
* Equipment : Adjustment Remote Controller

(1) Push the IN-START key in the Adjust R/C.
(2) Input the Option Number that was specified in the BOM, into the Shipping area.
(3) Select “Tool Option1/ Tool Option2/ Area Option” by using D/E(CH+/-) key, and press the number key(0~9) consecutively
ex) If the value of Tool Option1 is 7, input the data using number key “7” (Fig. 2)

Caution: Don’t Push “IN-STOP” key after PCB assembly adjustment.

(4) Adjustment method
Before PCBA check, have to change the Tool option and Area option

[About PDP
After done all adjustments, Press IN-START button and compare Tool option and Area option value with its BOM, if it is correctly same then Change “RF mode” and then unplug the AC cable.
If it is not same, then correct it same with BOM and unplug AC cable.
For correct it to the model°Øs module from factory JIG model.

[Don’t push The IN-STOP KEY after completing the function inspection.

5. S/W Program Download

5-1. Profile

This is for downloading the s/w to the flash memory of the IC803

5-2. Equipment

(1) PC
(2) ISP_tool program
(3) Download jig

5-3. Connection Structure

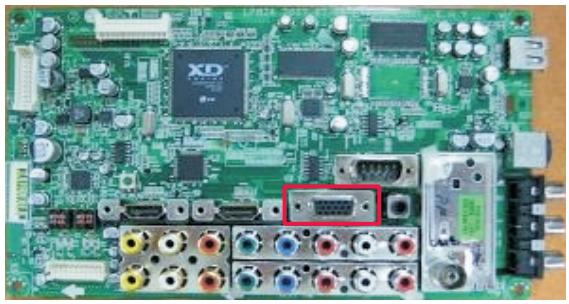
5-4. Connection Condition

(1) IC name and circuit number : Flash Memory and IC803
(2) Use voltage : 3.3V (5 pin)
(3) SCL : 15 pin
(4) SDA : 12 pin
(5) Tact time : about 2min and 30seconds

6. Download Method (PCB Ass’y)

6-1. Preliminary Steps

- HD



- FHD

(1) Connect the download jig to D-sub jack

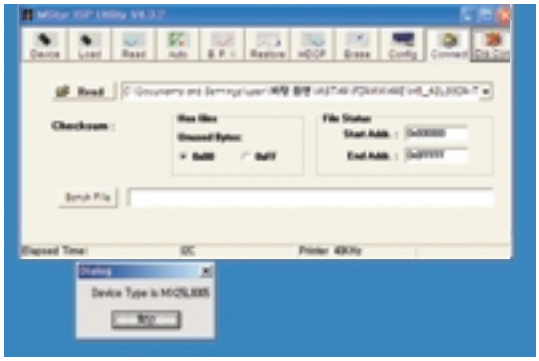
(2) Connect the PC to USB jack

6-2. Download Steps

(1) Execute 'ISP Tool' program in PC, then a main window will be opened

(2) Click the connect button and confirm "Dialog Box".

(3) Click the config button and change speed
E2PROM Device setting: over the 350Khz



(4) Read and write bin file
Click "(1)Read" tab, and then load download file(XXXX.bin) by clicking "Read".

(5) Click "Auto(2)" tab and set as below
(6) Click "Run(3)".
(7) After downloading, check "OK(4)" message.

[Notice : From this sentence, All working is mass production.

7. EDID(The Extended Display Identification Data) / DDC (Display Data Channel) Download

[Caution
- Use the proper signal cable for EDID Download
- Never connect HDMI & D-SUB Cable at the same time.
- Use the proper cables below for EDID Writing

7-1. Profile: To be possible for plug and play

7-2. Equipment

(1) Adjusting PC with S/W for writing EDID Data.(S/W: EDID TESTER Ver.2.5)
(2) A Jig for EDID Download
(3) Cable : Serial(9Pin or USB) to D-sub 15Pin cable, D-sub 15Pin cable, DVI to HDMI cable.

7-3. Connection Structure

<Fig. 3> Connection Diagram of DDC Download

Caution: Never connect HDMI & D-SUB Cable at the same time.

7-4. EDID Data

NO	Item	Condition	16진 Data
1	Manufacturer ID	GSM	1E6D
2	Version	Digital : 1	01
3	Revision	Digital : 3	03

o XGA/WXGA/Full HD EDID DATA
<Analog : 128bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	①		②			
0010	①		01	03	80	46	27	78	EA	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	08	00	A		45	40	61	40	B		01	01
0030	01	01	01	01	01	01	64	19	00	30	41	00	1E	30	30	68
0040	34	00	BC	86	21	00	00	1C	1							
0050	1										00	00	00	FD	00	3B
0060	46	1F	4A	10	00	0A	20	20	20	20	20	20	③			
0070	③														01	④
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	10	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	②

<HDMI 1 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	①		②			
0010	①		01	03	80	46	27	78	EA	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	08	00	A		45	40	61	40	B		01	01
0030	01	01	01	01	01	01	64	19	00	30	41	00	1E	30	30	68
0040	34	00	BC	86	21	00	00	1C	1							
0050	1										00	00	00	FD	00	3B
0060	46	1F	4A	10	00	0A	20	20	20	20	20	20	③			
0070	③														01	④
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	10	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	②

<HDMI 2 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	①		②			
0010	①		01	03	80	46	27	78	EA	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	08	00	A		45	40	61	40	B		01	01
0030	01	01	01	01	01	01	64	19	00	30	41	00	1E	30	30	68
0040	34	00	BC	86	21	00	00	1C	1							
0050	1										00	00	00	FD	00	3B
0060	46	1F	4A	10	00	0A	20	20	20	20	20	20	③			
0070	③														01	④
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	20	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	②

<HDMI 3 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	①		②			
0010	①		01	03	80	46	27	78	EA	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	08	00	A		45	40	61	40	B		01	01
0030	01	01	01	01	01	01	64	19	00	30	41	00	1E	30	30	68
0040	34	00	BC	86	21	00	00	1C	1							
0050	1										00	00	00	FD	00	3B
0060	46	1F	4A	10	00	0A	20	20	20	20	20	20	③			
0070	③														01	④
0080	02	03	26	F1	50	07	01	16	02	03	11	12	13	84	14	05
0090	20	21	22	1F	10	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	30	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	②

o Detail EDID Options are below (ⓐ, ⓑ, ⓒ, ⓓ, ⓔ)

ⓐ Product ID

Model Name	Product ID		
	DEC	HEX	EDID table
32PC5RA-TD	30311(A)	7667	6776
	30312(D)	7668	6876
32PC5RA1-TB	30313(A)	7669	6976
	30314(D)	7670	7076
32PC5RAC-TD	30315(A)	7671	7176
	30316(D)	7672	7276
32PC5RA-MF	30317(A)	7673	7376
	30318(D)	7674	7476
32PC53-ZB	30319(A)	7675	7576
	30320(D)	7676	7676
32PC54-ZD	30321(A)	7677	7776
	30322(D)	7678	7876

ⓑ Serial No
=> Controlled on production line

ⓒ Month, Year
=> Controlled on production line:
ex) Monthly: '11' -> '0B'
Year: '2007' -> '11'

ⓓ Model Name(Hex)

MODEL NAME	Model Name(HEX)																	
LG TV	00	00	00	FC	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20

ⓔ Checksum
=> Changeable by total EDID data

1) Analog(128Byte)

	(HEX)																	
50/60inch Model	1B	21	50	A0	51	00	1E	30	48	68	35	00	BC	68	21	00	00	1C
42inch Model	64	19	00	30	41	00	1E	30	30	68	34	00	BC	68	21	00	00	1C
FULL HD Model	1A	36	80	A0	70	38	1F	40	30	20	25	00	58	44	21	00	00	1A

	(HEX)																	
50/60inch Model	0E	1F	00	80	51	00	1E	30	40	60	37	00	BC	68	21	00	00	1E
42inch Model	A0	0F	20	00	31	58	1C	20	28	60	11	00	BC	39	20	00	00	18
FULL HD Model	1B	21	50	A0	51	00	1E	30	48	68	35	00	BC	68	21	00	00	1C

2) HDMI 1/2/3(256Byte)

	(HEX)																	
50/60inch Model	1B	21	50	A0	51	00	1E	30	48	68	35	00	BC	68	21	00	00	1C
42inch Model	A0	0F	20	00	31	58	1C	20	28	60	11	00	BC	39	20	00	00	18
FULL HD Model	F3	39	80	18	71	38	2D	40	58	2C	45	00	C4	68	21	00	00	18

A

	(HEX)	
FULL HD Model	81	80
XGA / WXGA	01	01

B

	(HEX)	
FULL HD Model	D1	CD
XGA / WXGA	01	01

7-5. Preparation for Adjustment

(1) As above Fig. 3, Connect the Set, EDID Download Jig,, PC & Cable
(2) Turn on the PC & EDID Download Jig. And Execute the S/W : EDID TESTER Ver.2.5
(3) Set up the S/W option
Repeat Number : 5
Device Address : A0
PageByte : 8

(4) Power on the Set

1) Sequence of Adjustment

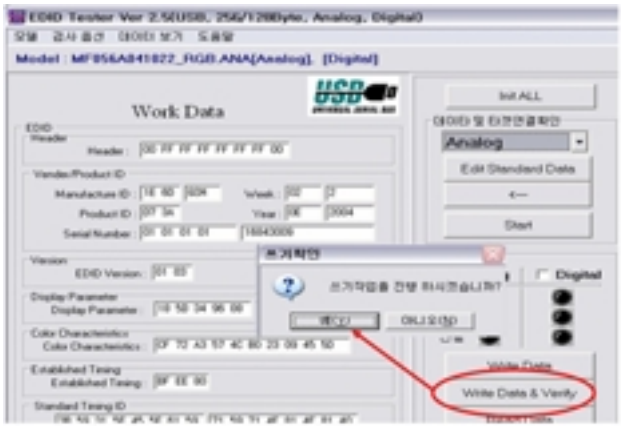
1. DDC data of Analog-RGB
(1) Init the data

(2) Load the EDID data.(Open File).

[Analog – RGB : PPS1A_RGB.ANA]
[Digital – HDMI1 : PPS1A_HDMI1.DVI]
[Digital – HDMI2 : PPS1A_HDMI2.DVI]
[Digital – HDMI3 : PPS1A_HDMI3.DVI]

(3) Set the S/W as below.

(4) Push the “Write Data & Verify” button. And confirm “Yes”.



(5) If the writing is finished, you will see the “OK” message.

8. HDCP(High-Bandwidth Digital Contents Protection)

[Confirmation

Before HDCP Download, you have to Set the Configuration that CMD delay.

-> Configuration -> Option-> I2C delay(Write Byte : 0.5 ms, Read Byte : 0.5ms, Read CMD Byte : 0.5ms)

(1) Connect D-sub Signal Cable to D-Sub Jack
(2) Input HDCP key with HDCP-key- in-program
(3) HDCP Key value is stored on Main M-STAR IC(LGE6891DD) which is 0x80~0x90 addresses of 0x00~0x01 page(EEPROM MAP PAGE0~PAGE1 / START :A080)
(4) AC off/on and on HDCP button of MSPG925 and confirm whether picture is displayed or not of using MSPG925
(5) HDCP Key value is different among the sets

9. Adjustment of White Balance

9-1. Purpose and Principle for Adjustment of the Color Temperature

(1) Purpose: Adjust the color temperature to reduce the deviation of the module color temperature.
(2) Principle : To adjust the white balance without the saturation, Fix the one of R/G/B gain to C0 and decrease the others.
(3) Adjustment mode: Two modes of Cool and Warm
(Cool data is automatically calibrated by the Medium data)

9-2. Required Equipment

(1) Remote controller for adjustment
(2) Color Analyzer : CA-100+ or CA-210 or same product
- PLASMA TV(ch : 10)

(3) Auto W/B adjustment instrument(only for Auto adjustment)
- Do the white balance adjustment under the 10LUX

[Notice: When using the Color Analyzer with PDP, recommend the CA-100 more than CA-210.
If CA-100 can not available, it is also good to use the CA-210.

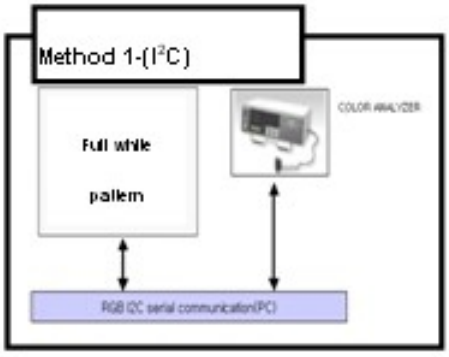
(4) PC (for communication through RGB)
(5) Pattern Generator (MSPG-925FA etc.)
-Before white balance, press the ADJ key 2times and do the reset like Fig. 4
-To enter White-balance mode, press the ADJ key 2times.

[Caution: System control Host should be “DDC” for adjustment.

<Fig. 4>

9-3. Connecting Diagram of Equipment for Measuring (For Automatic Adjustment)

(method 1, using IIC, You connect RGB Cable)



(1) Enter the adjustment mode of the white balance
- Enter the white balance adjustment mode at the same time heat-run mode when pushing the power on by power only key
- Maintain the white balance adjustment mode with same condition of Heat-run
- Maintain after AC off/on in status of Heat-run pattern display

(2) Release the white balance adjustment mode
- Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
- push the “power on” key(IIC Mode) on Adjust remote-controller.
- Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment)

(3) Enter the adjust mode of white balance
- Enter the white balance adjustment mode with aging command(F3, 00, FF)

o Color Temperature & Color Coordinates Setting
- When adjusting the Color Temperature, Color Analyzer CA-210(Matrix should be corrected through CH10 of CS-1000) should be used. When CA-210 have used, it don’t need to fit the CH10.
- Adjust the Color Temperature based below adjustment color coordinates.

o Target Value CA-210(LCD : CH 9, PDP : CH10), CA-100(PDP)
(Standard color coordinate and temperature when using the CA-100+ or CA210 equipment)

Mode	Color coordinate		Temp	△uv
	X	Y		
Medium	0.285±0.002	0.293±0.002	9,300k	+0.000
Warm	0.313±0.002	0.329±0.002	6,500k	+0.003

o Synchronization relation between PSM and CSM

PSM	CSM
Vivid	Cool
Mild	Warm

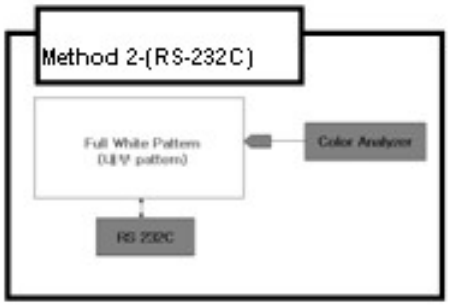
o DDC Adjustment Command Set

No.	Adjustment content	CMD(HEX)	ADR	VALUE	detail
1	Aging On/Off	F3	00	FF/00	OO : OFF 01 : ON FF : WB Ready
2	Input select	F4	00		0x10 : TV 0x20 : AV1 0x21 : AV2 0x23 : AV3 0x40 : Component1 0x41 : Component2 0x60 : RGB PC 0x90 : HDMI1 0x91 : HDMI2 0x92 : HDMI3
3	**R GAIN**	**16**	00	00 - FE	Gain Adjustment
4	**G GAIN**	**18**		00 - FE	CSM COOL
5	**B GAIN**	**1A**		00 -FE	
6	**R GAIN**	**16**	01	00 - FE	Gain Adjustment
	G GAIN	**18**		00 - FE	CSM MEDIUM
	B GAIN	**1A**		00 -FE	
	R GAIN	**16**	02	00 - FE	Gain Adjustment
	G GAIN	**18**		00 - FE	CSM WARM
	B GAIN	**1A**		00 -FE	
	CSM mode	**F2**	00	00	COOL
				01	MEDIUM
				02	WARM
	EEPROM Read	**E7**	00	00	EEPROM read
	EEPROM Write	**E8**	00	data	EEPROM write

[R/G/B GAIN max value : C0

9-4. Connecting Diagram of Equipment for Measuring (For Automatic Adjustment)

(method2, using RS-232C, You connect RS-232C Cable)



(1) Enter the adjustment mode of the white balance
- Enter the white balance adjustment mode at the same time heat-run mode when pushing the power on by power only key
- Maintain the white balance adjustment mode with same condition of Heat-run
- Maintain after AC off/on in status of Heat-run pattern display

(2) Release the white balance adjustment mode
- Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
- push the “Tilt” key (RS-232C Mode) on Adjust remote-controller.
- Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment)

(3) Enter the adjust mode of white balance
- you need push “tilt” key on Adjust remote-controller.
- Enter the white balance adjustment mode with aging command(F3, 00, FF)

9-5. Adjustment of White Balance for Manual Adjustment (method 3)

Adjustment mode: Two modes of Medium(Vivid) and Warm
(Cool data is automatically calibrated by the Medium data)

- Equipment : 1) Color analyzer(CA100+, CA210) should be used in the calibrated ch by CS-1000(.(LCD : CH9, PDP : CH10)
  2) Adjustment remocon

- For manual adjustment, it is also possible by the following sequence.
  Operate the zero-calibration of the CA-100+ or CA-210, then stick sensor to the module when adjusting.

(1) Select white pattern of heat-run by pressing “POWER ON” key on remote control for adjustment then operate heat run longer than 15 minutes. (recommend)
(If not executed this step, the condition for W/B will be different)
(2) Changing to the AV mode by remote control.(Push front-AV)
(3) Input external pattern(85% white pattern).
(4) Stick sensor to center of the screen and select each items (Red/Green/Blue Gain and Offset) using D/E(CH +/-) key on R/C..
(5) Adjust R/ G/B Gain using F/G(VOL +/-) key on R/C.
(6) Adjust two modes of Medium(Vivid) and Warm as below figure.
(Fix the one of R/G/B and change the others)
1) Default : Medium(Vivid)
2) Push the “VOL +” key twice : Warm

Mode	Color coordinate		Temp	△uv
	X	Y		
Medium	0.285±0.002	0.293±0.002	9,300k	+0.000
Warm	0.313±0.002	0.329±0.002	6,500k	+0.003

[Refer to the below case to know what value is fixed.

[CASE]
First adjust the coordinate much away from the target value(x, y).

1. x, y > target
   1) Decrease the R, G.

2. x, y < target
   1) First decrease the B gain,
   2) Decrease the one of the others.
      - In case of decreasing the x, decreasing the R : fix G
      - In case of decreasing the y , decreasing the G : fix R

3. x > target , y < target
   1) First decrease B, so make y a little more than the target.
   2) Adjust x value by decreasing the R

4. x < target , y > target
   1) First decrease B, so make x a little more than the target.
   2) Adjust x value by decreasing the G

(7) When adjustment is completed, Exit adjustment mode using EXIT key on R/C.

Caution: Each PCB assembly must be checked by check JIG set. (Because power PCB Assembly damages to PDP Module, especially be careful)

10. POWER PCB Assy Voltage Adjustment(Va, Vs voltage Adjustment)

10-1. Test Equipment: D.M.M 1EA

10-2. Connection Diagram for Measuring

Refer to Fig. 5

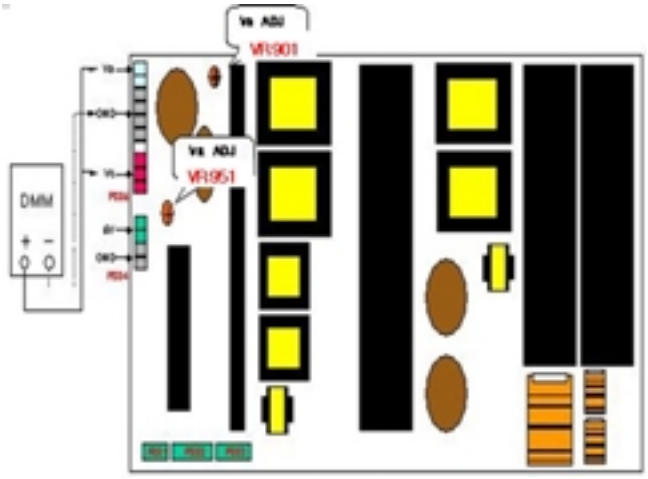
10-3. Adjustment Method

(1) Va Adjustment

1) After receiving 100% Full White Pattern, HEAT RUN.
2) Connect + terminal of D. M..M. to Va pin of P812, connect -terminal to GND pin of P812.
3) After turning VR901,voltage of D.M.M adjustment as same as Va voltage which on label of panel right/top (deviation; ±0.5V)

(2) Vs Adjustment

1) Connect + terminal of D. M..M. to Vs pin of P812, connect -terminal to GND pin of P812.
2) After turning VR951 401, voltage of D.M.M adjustment as same as Vs voltage which on label of panel right/top (deviation ; ±0.5V)



<Fig. 7> Connection Diagram of Power Adjustment for Measuring

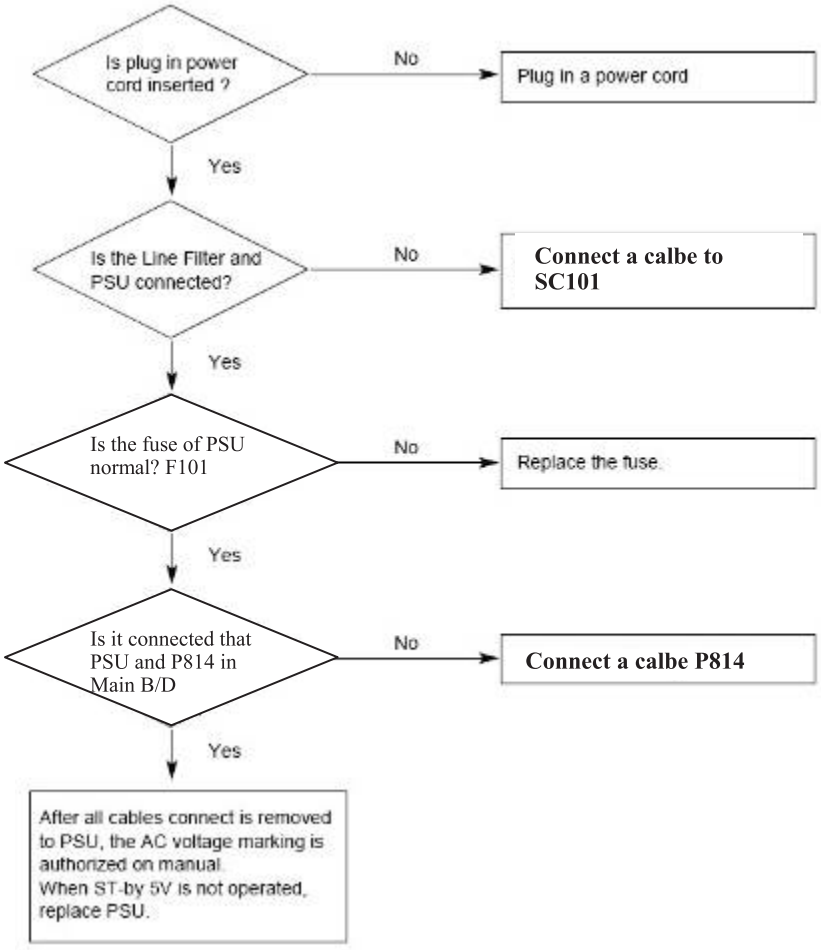
GUÍA PARA SOLUCIONES DE PROBLEMAS

1. No power

1) Symptom

1) It is not discharged minutely from the module.
2) Light does not come into the front LED.

2) Check process



2. Protect Mode

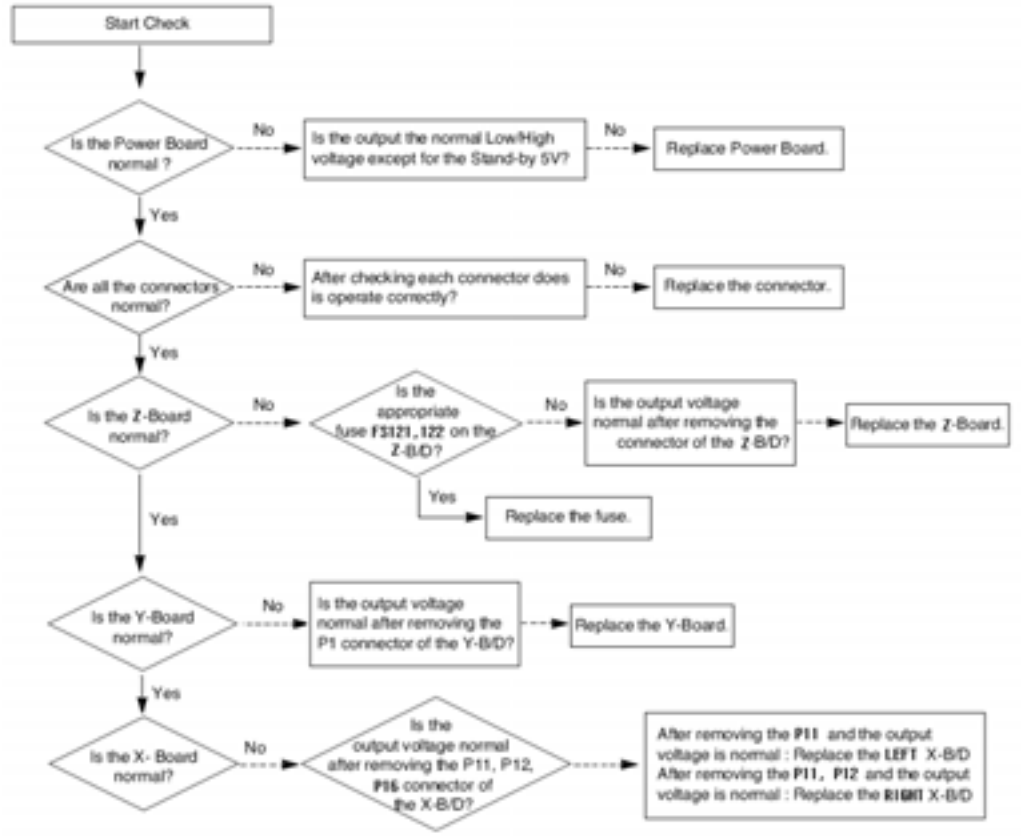
1) Symptom

1) After lighting once it does not discharge minutely from the module.

2) The relay falls.(there is an audible “Click”.)

3) The color of the front LED turns from green to red.

2) Check process



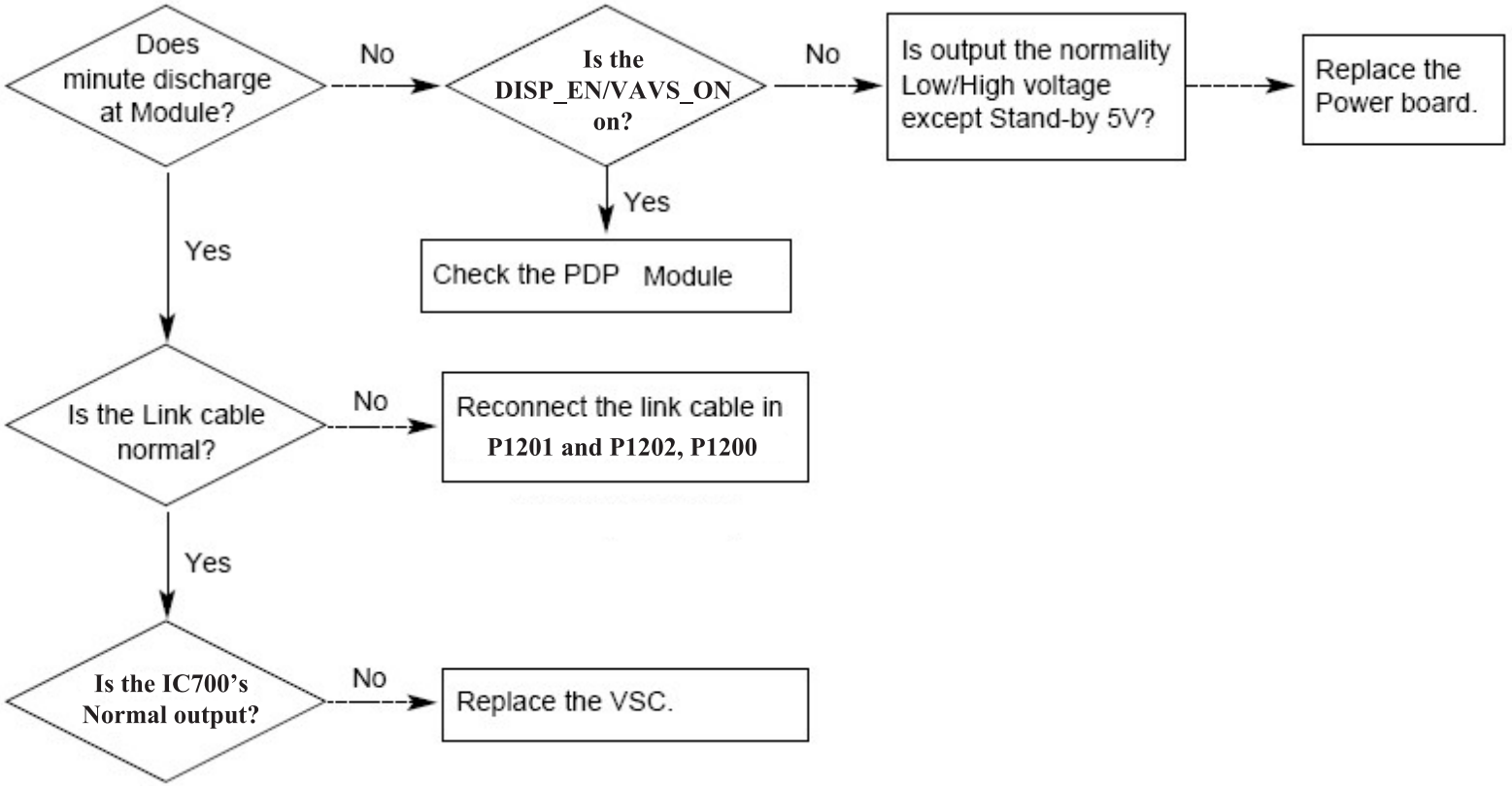
3. No Raster

1) Symptom

1) No OSD and image occur at screen.

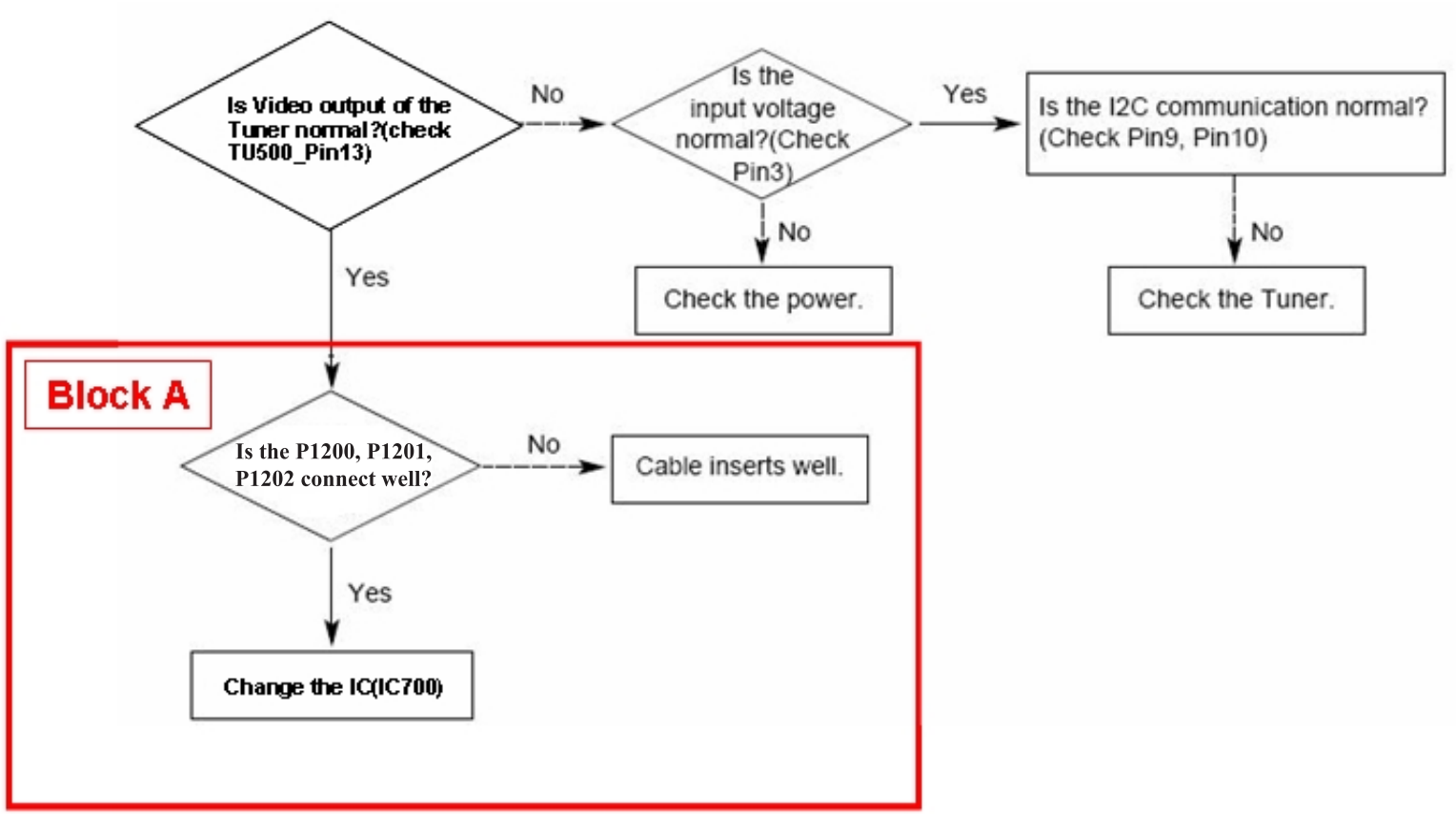
2) It maintains the condition where the front LED is green.

2) Check process

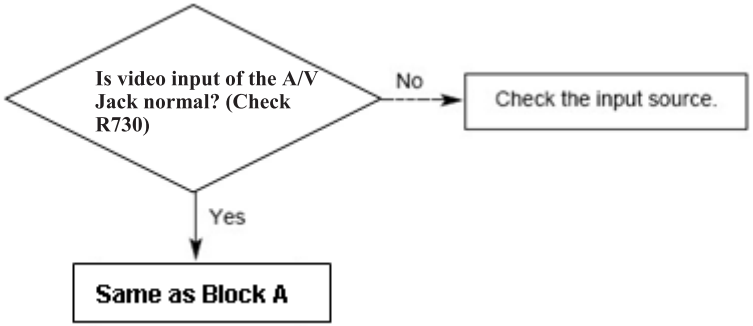


4. Unusual display from RF mode.

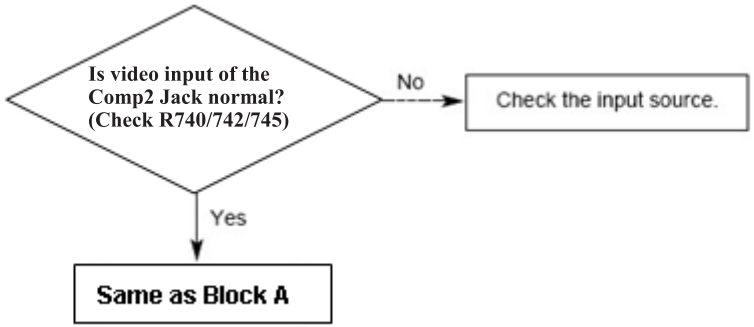
1) Check process



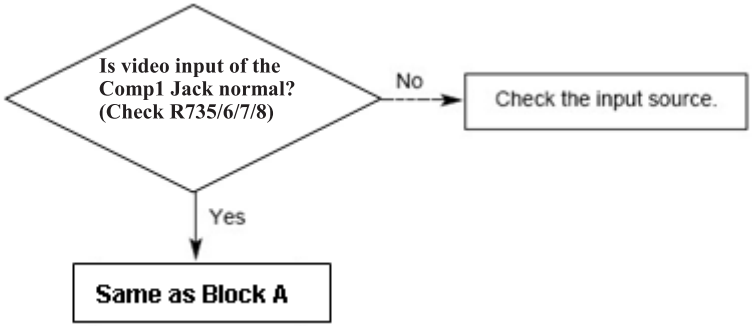
5. Unusual display from rear AV mode.



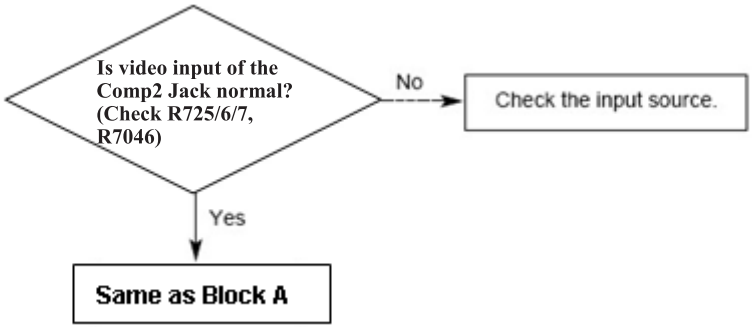
6. Unusual display from RGB mode.



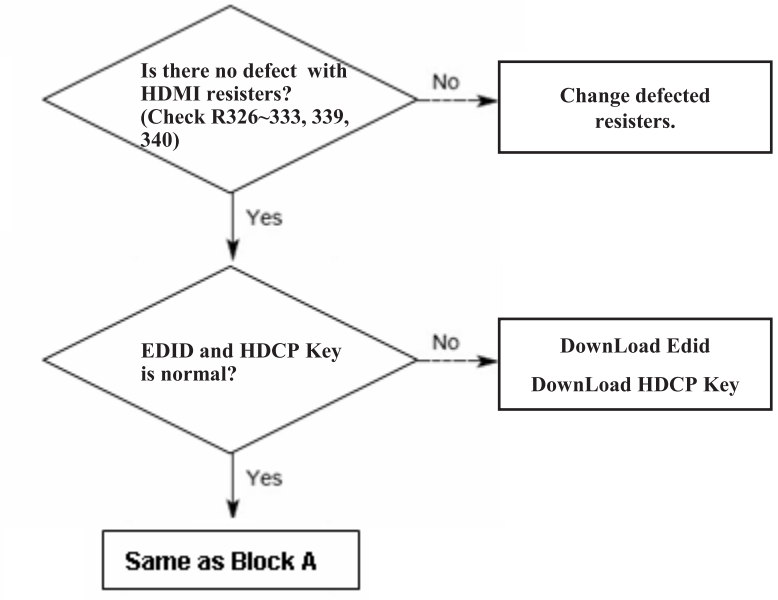
7. Unusual display from component 1 mode.



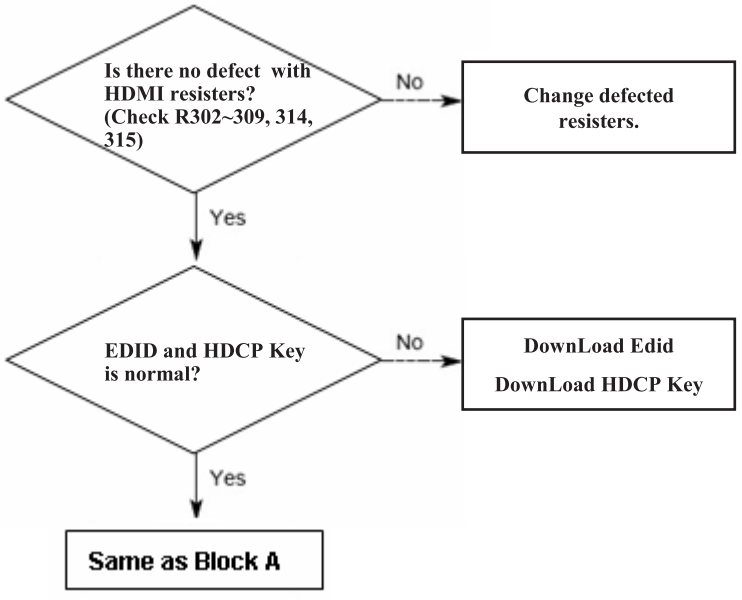
8. Unusual display from component 2 mode.



9. Unusual display from HDMI1 mode.



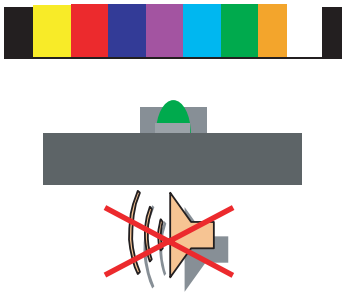
10. Unusual display from HDMI2 mode.



10. No Sound

1) Symptom

1) LED is green.
2) Screen display but sound is not output.



2) Check process

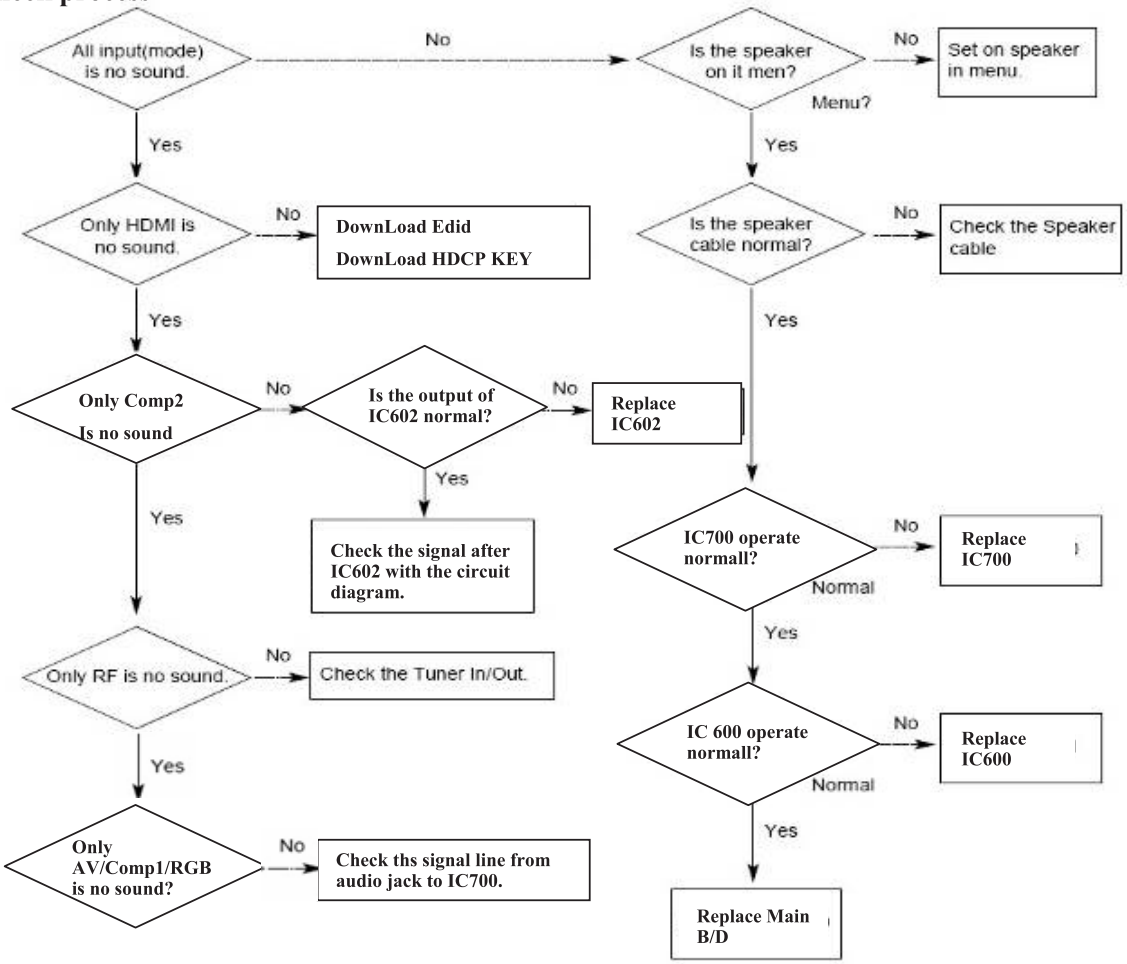
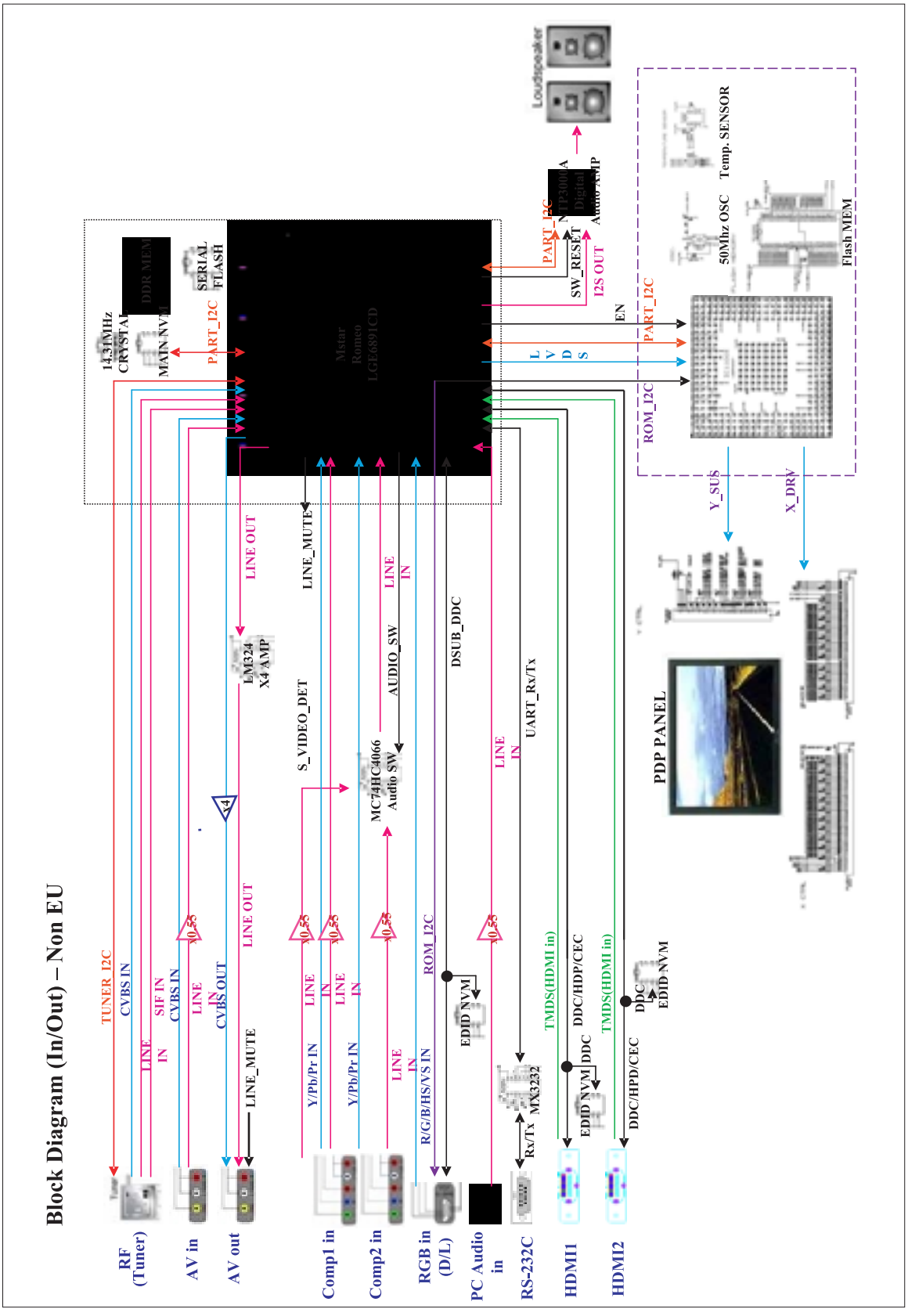
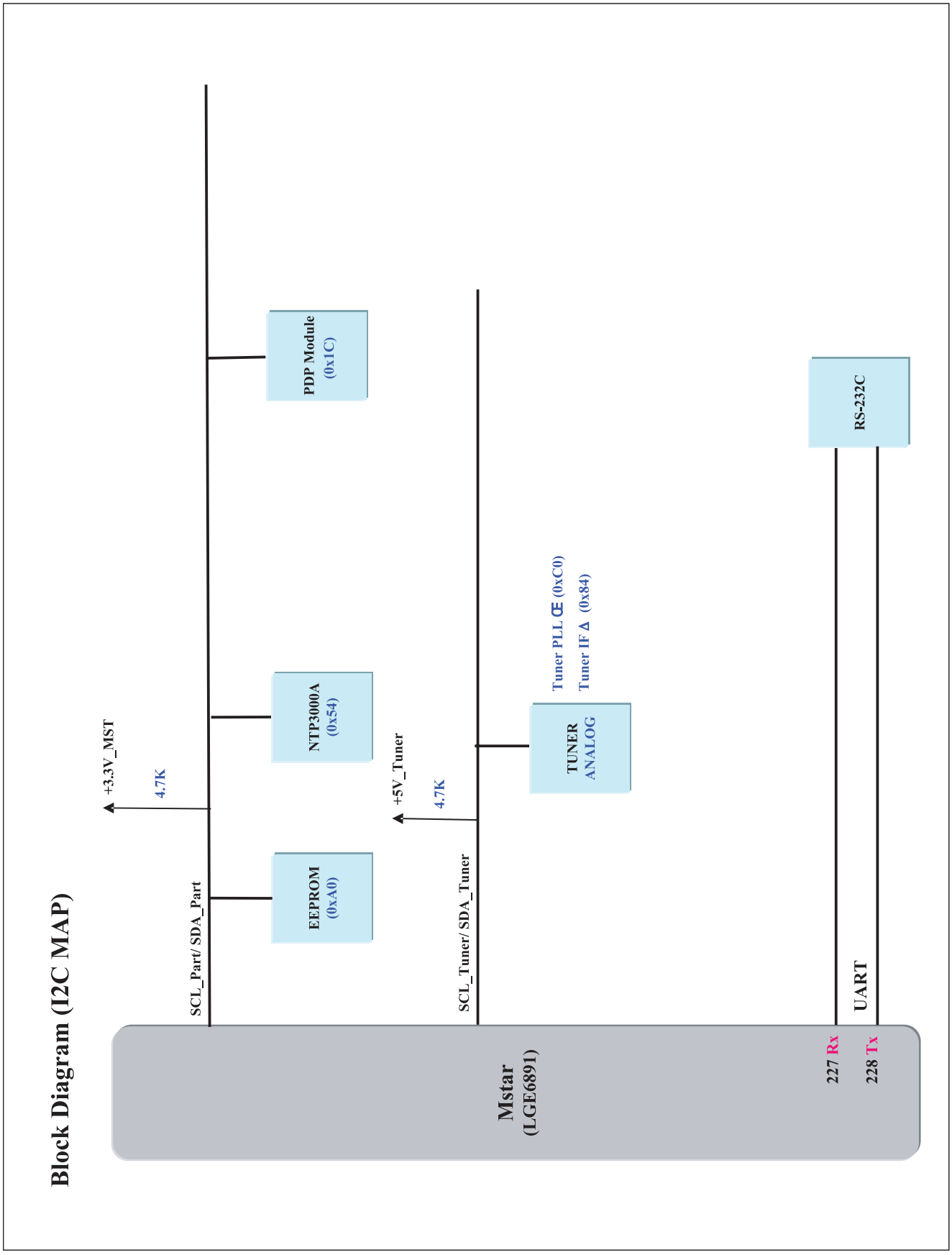


DIAGRAMA EN BLOQUE

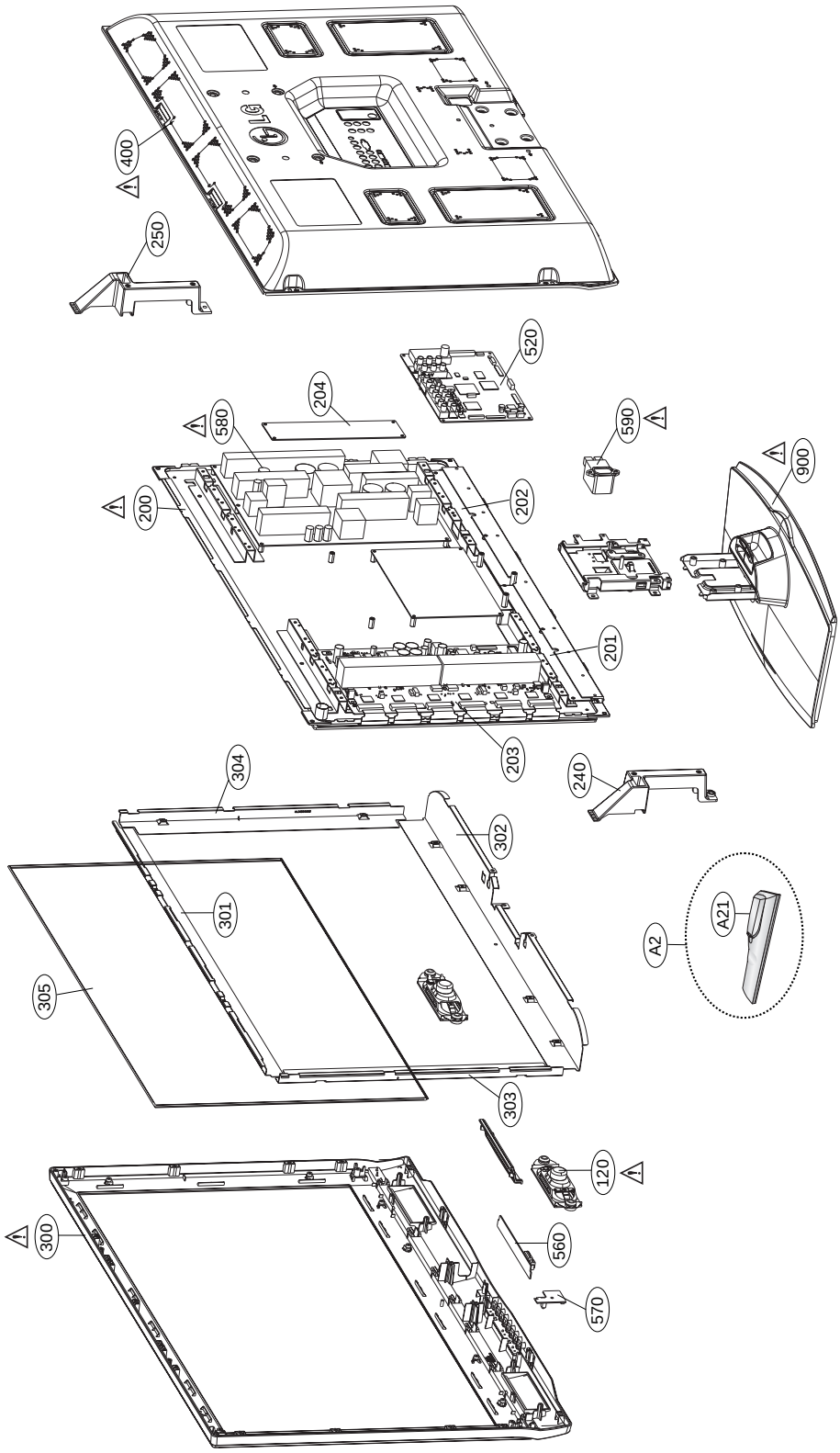




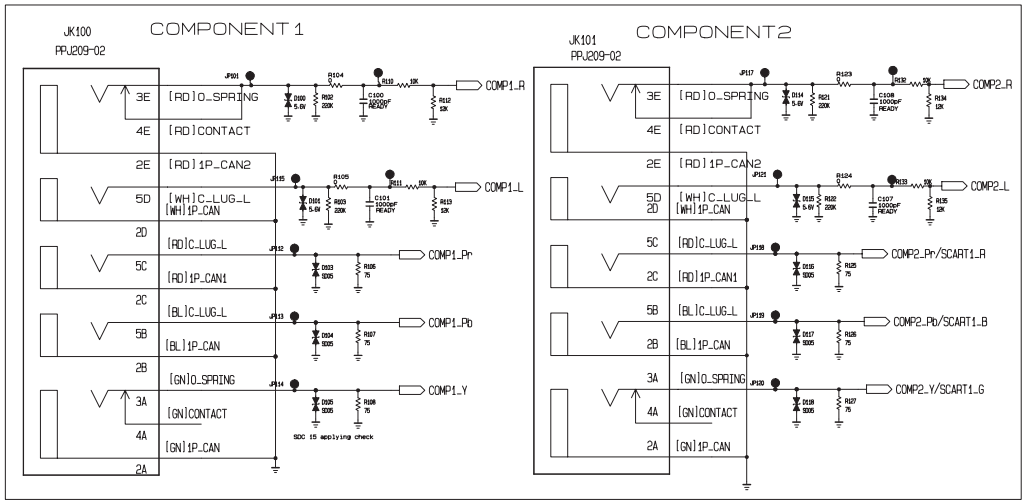
VISTA EN DESPIECE

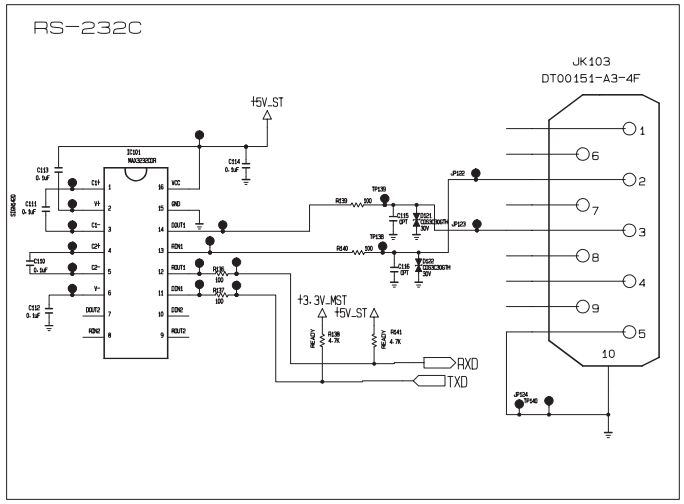
IMPORTANT SAFETY NOTICE

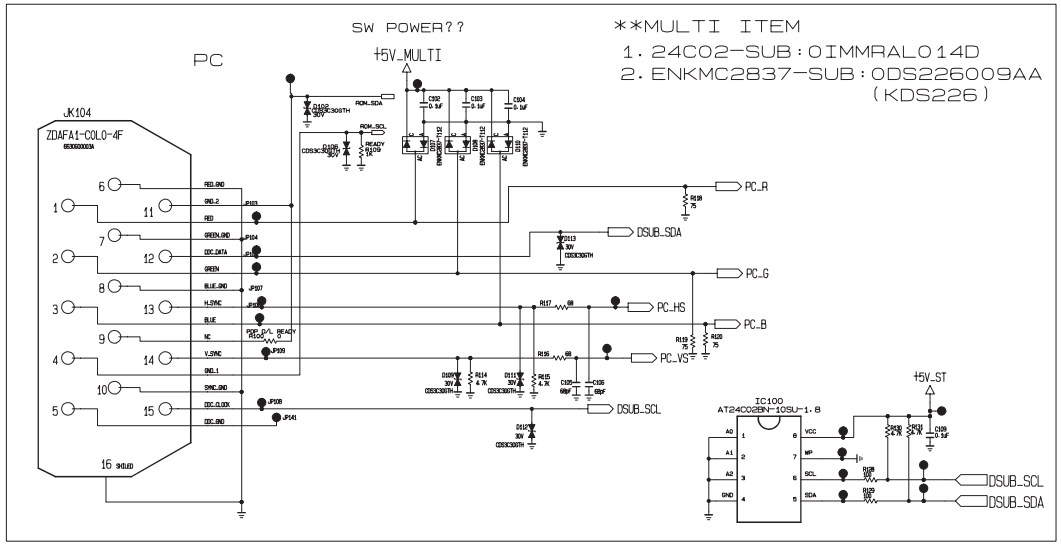
Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.



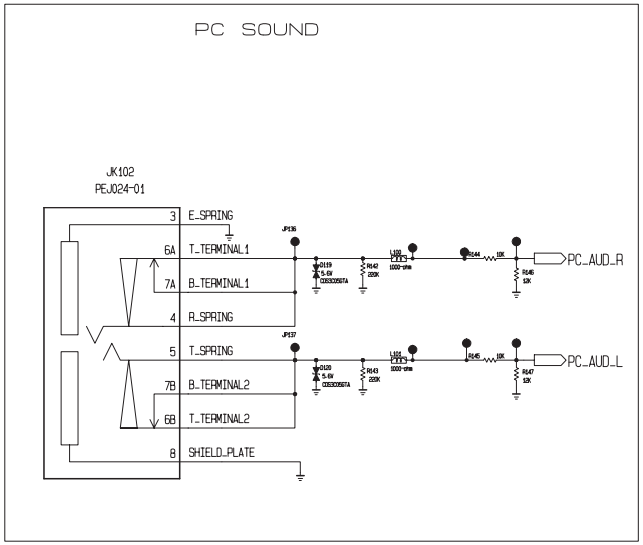
EAX50588103
MSTAR H5 32PC5







**MULTI ITEM
1. 24C02-SUB:0IMMRAL014D
2. ENKMC2837-SUB:0DS226009AA
(KDS226)



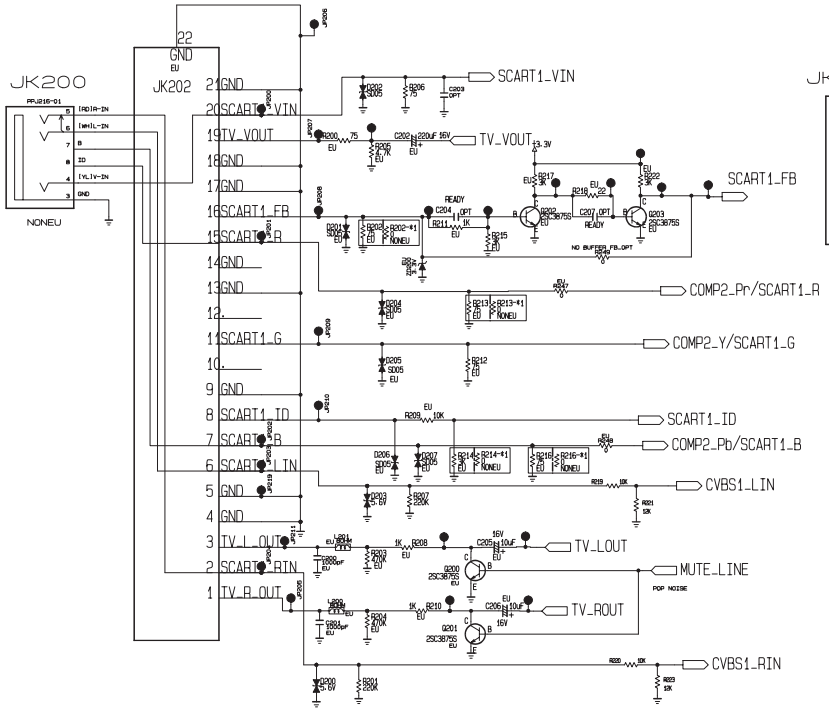
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

INPUT1 : COMP1/2, RS232C, PC

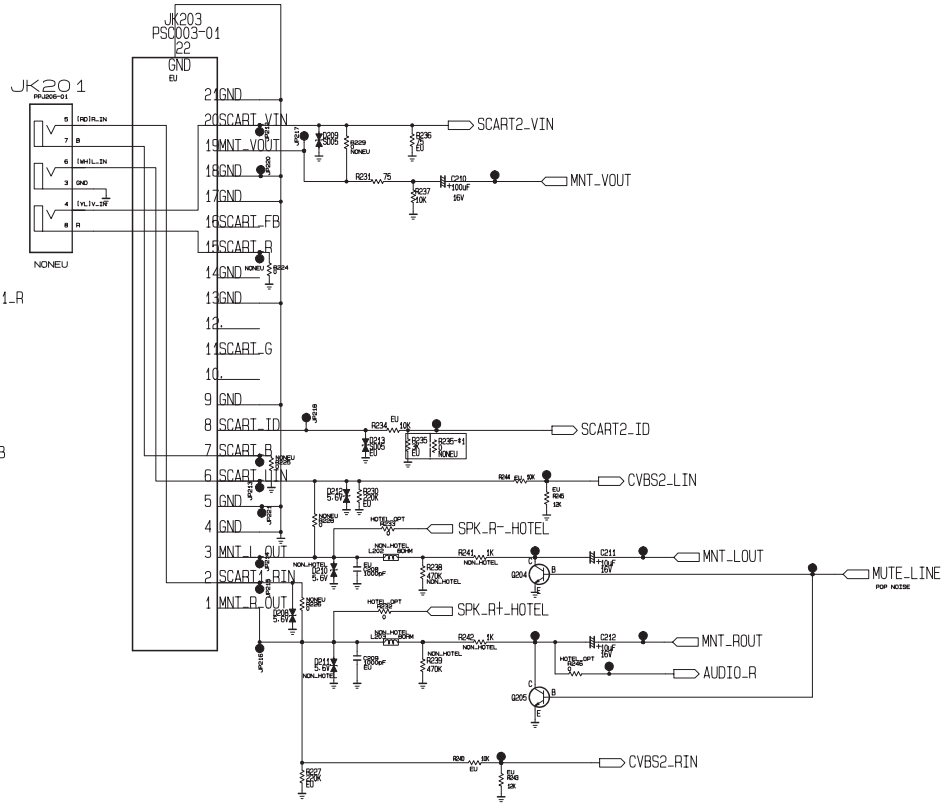
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	INPUT1	SHEET	1 / 12

EAX50588103
MSTAR H5 32PC5

SCART1



SCART2

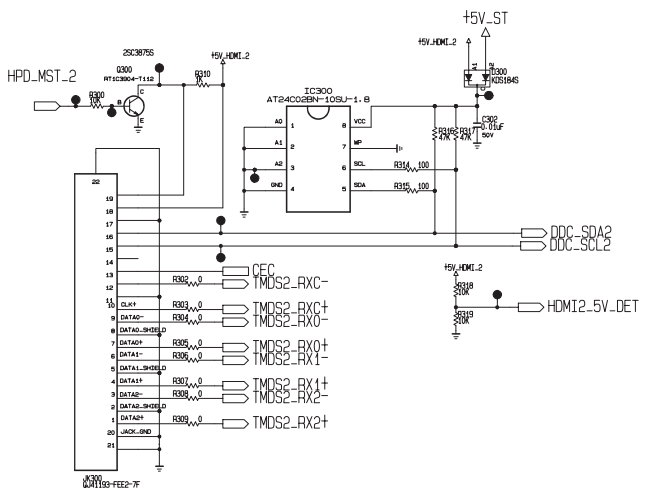


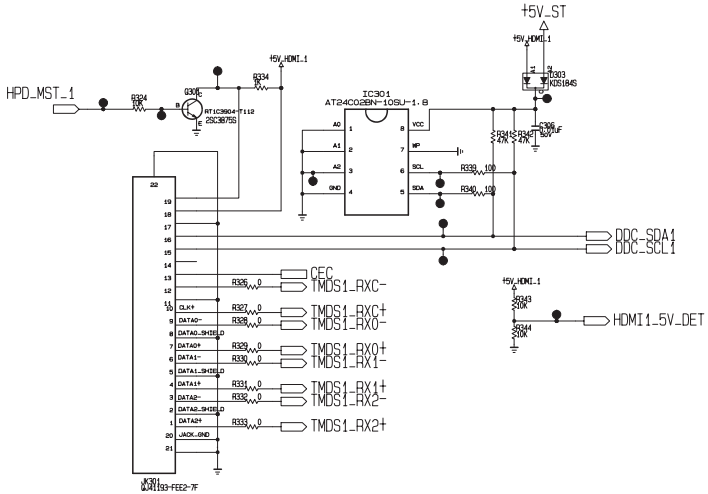
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

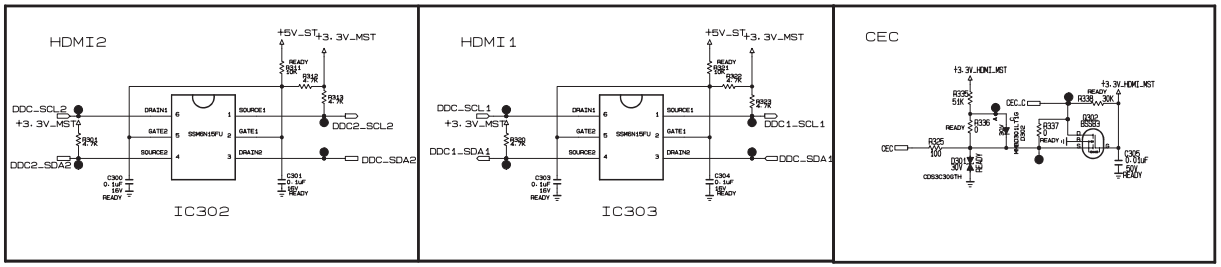
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	INPUT2	SHEET	2 / 12

EAX50588103
MSTAR H5 32PC5

OPTION
SW_HPD : USE SW HPD (Default)
MST_HPD : USE MST HPD







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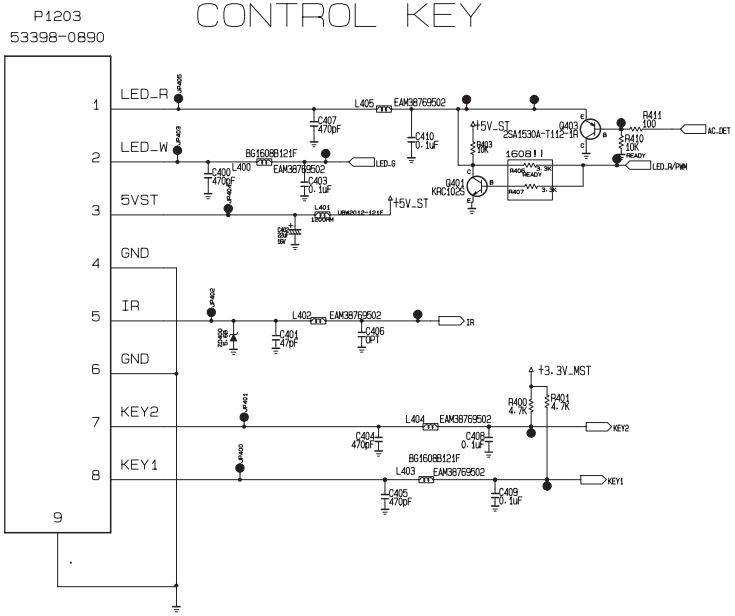
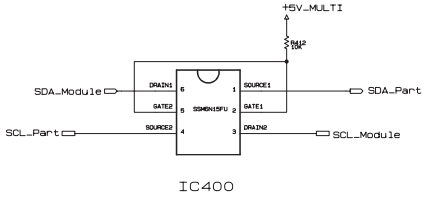
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	HDMI 1/2	SHEET	3/12

EAX50588103
MSTAR H5 32PC5

CONTROL KEY



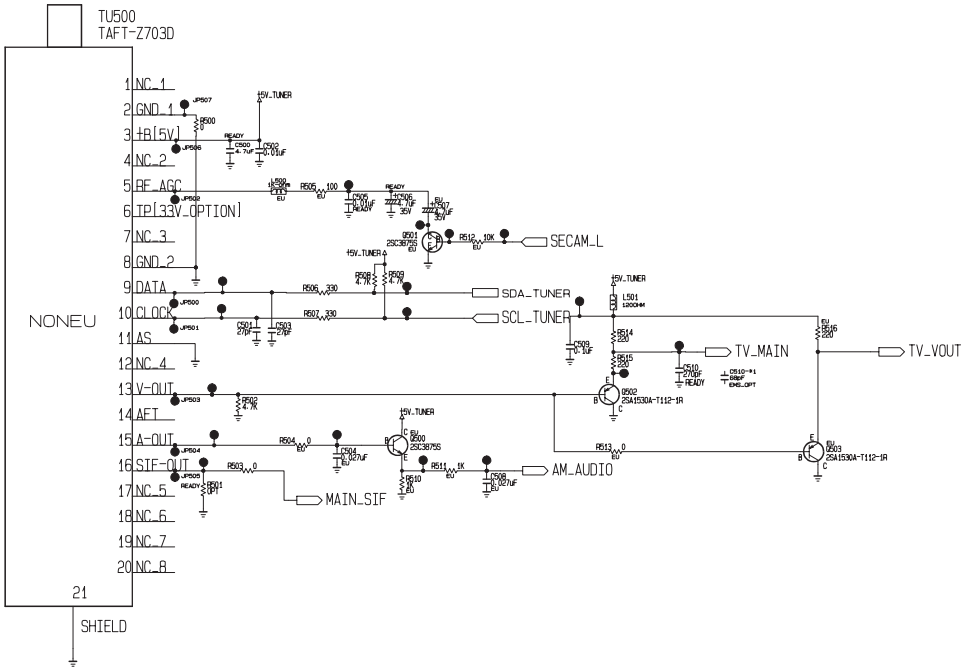


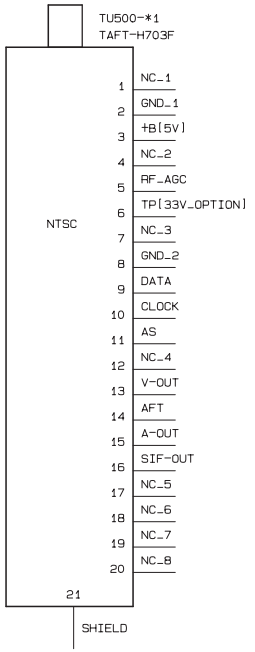
IC400

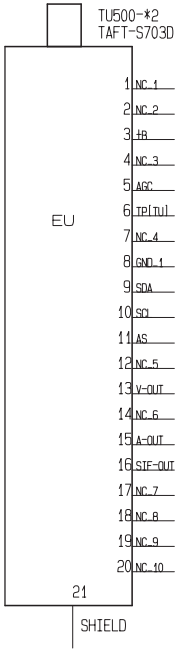
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	CTRL KEY	SHEET	4 / 12

EAX50588103
MSTAR H5 32PC5







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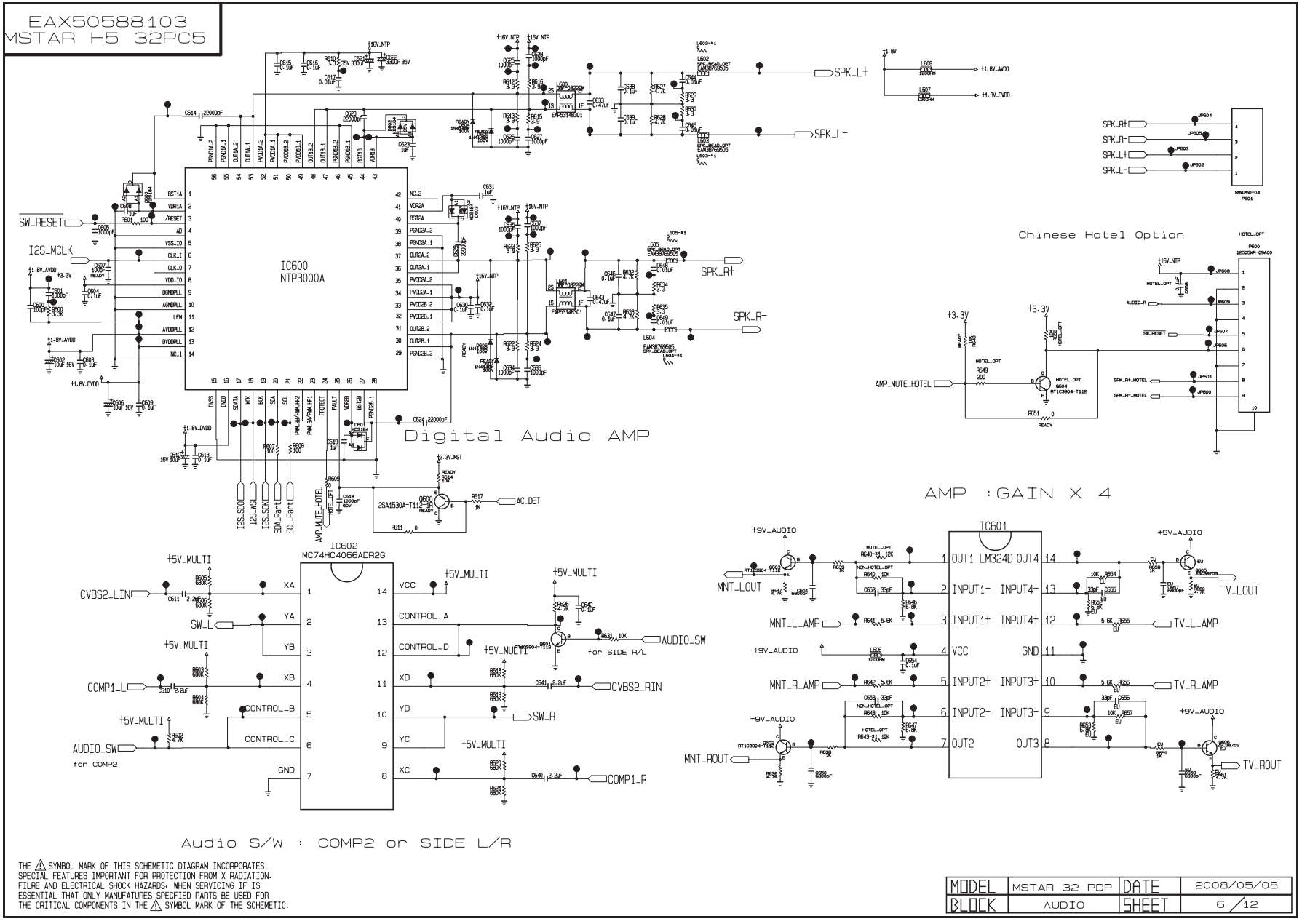
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	TUNER	SHEET	5 / 12

EAX50588103
MSTAR H5 32PC5



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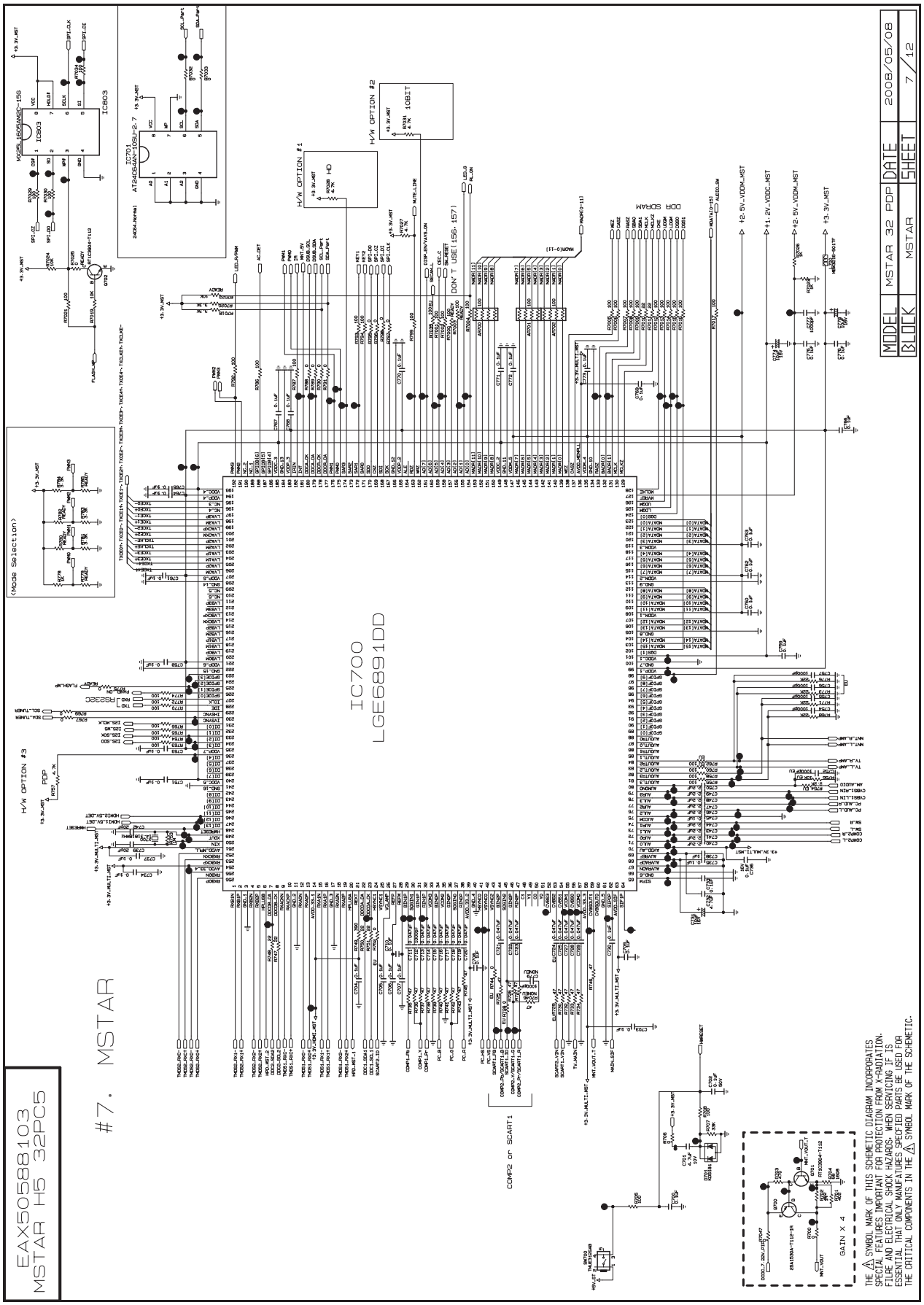
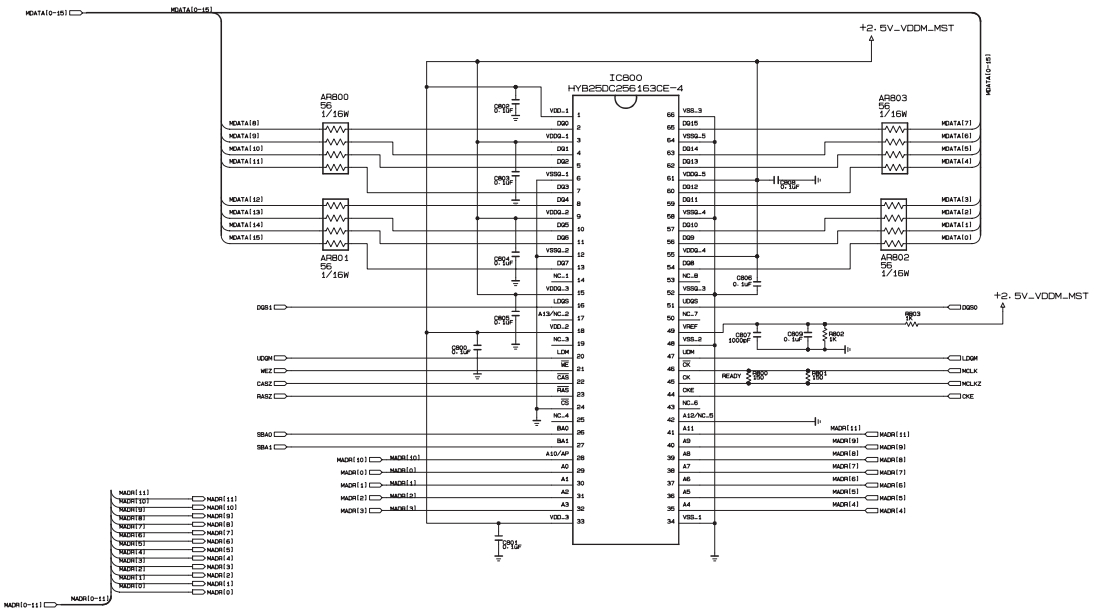
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	AUDIO	SHEET	6 / 12



EAX50588103
MSTAR H5 32PC5

#8. DDR



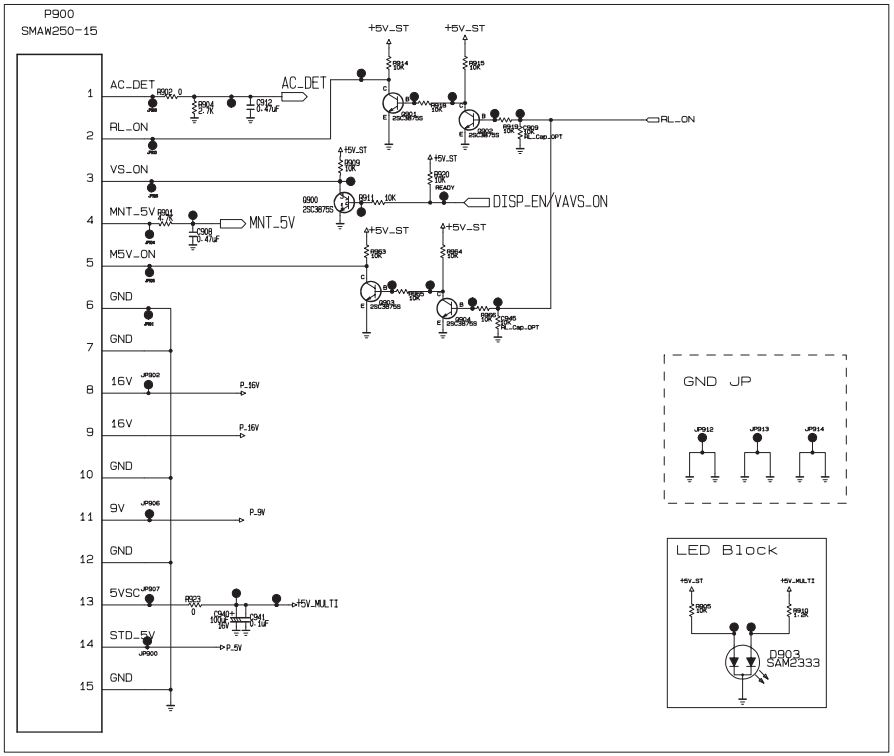
**MULTI ITEM

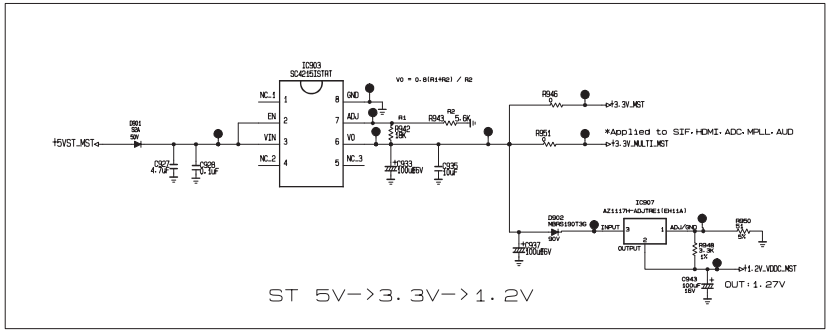
MAIN - QIMONDA : EAN41788501
SUB - HYNIX : EAN31729202

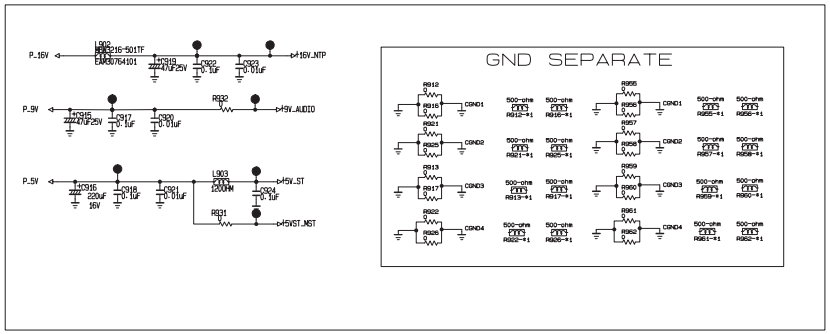
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

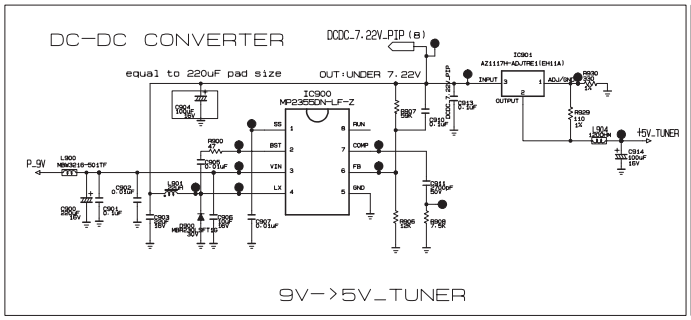
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	DDR	SHEET	8 / 12

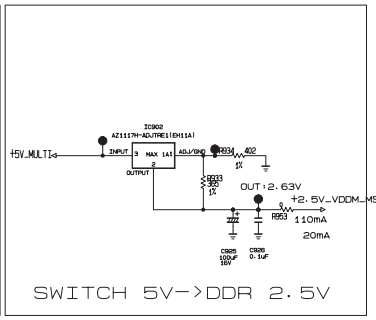
EAX50588103
MSTAR H5 32PC5

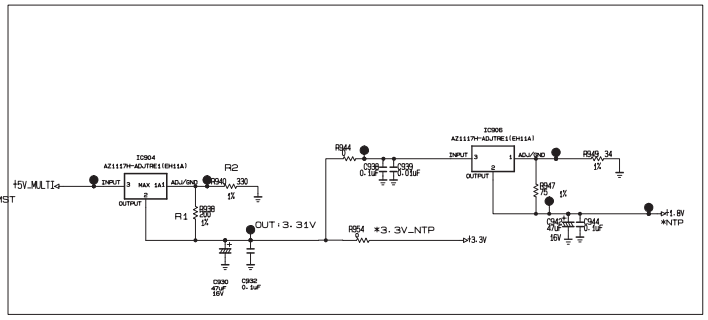












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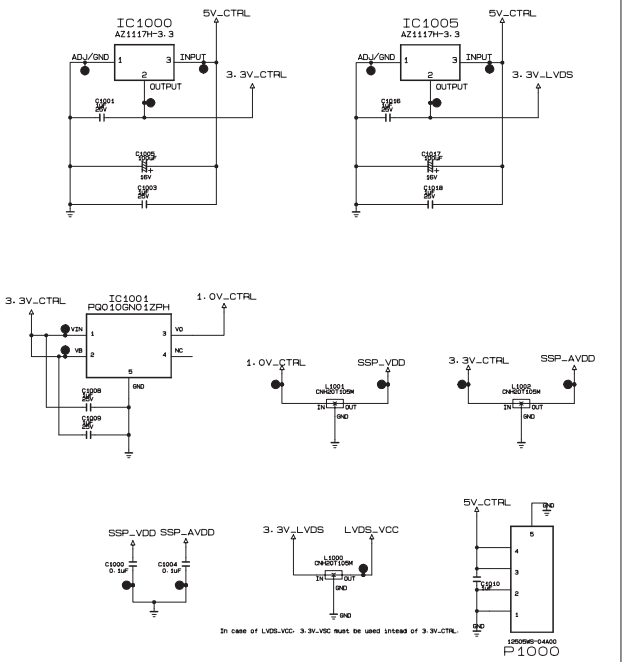
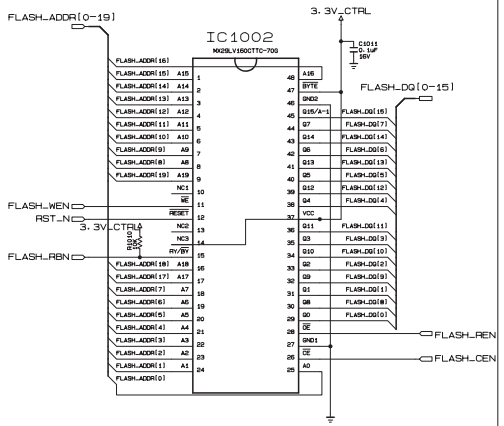
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	POWER	SHEET	9 / 12

EAX50588103
MSTAR H5 32PC5

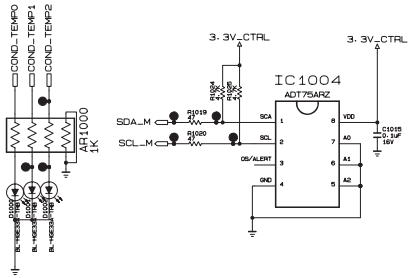
POWER



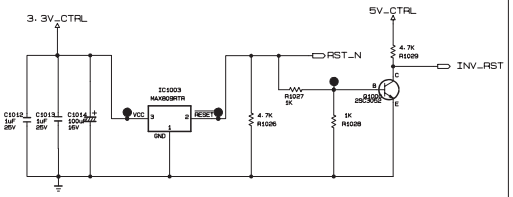
FLASH MEMORY



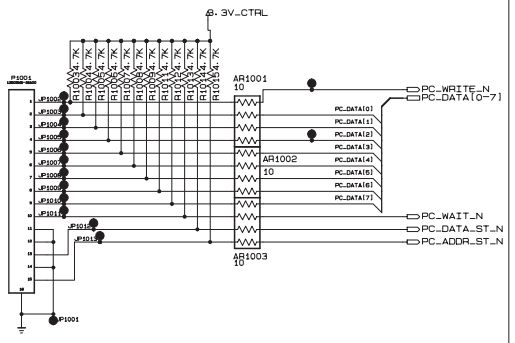
TEMPERATURE SENSOR



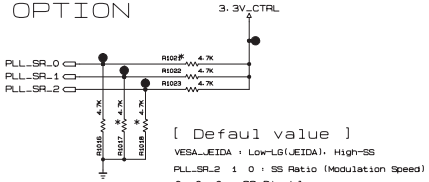
RESET



Download Port



OPTION



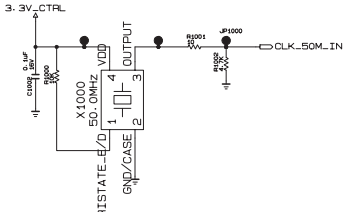
[Defaul value]

VESA_JEIDA : Low-LG(JEIDA), High-SS

PLL_SR_2 1 0 : SS Ratio (Modulation Speed)

0	0	0	: SS Disable
0	0	1	: +/- 1.0% (50KHz)
0	1	0	: +/- 1.5% (50KHz)
0	1	1	: +/- 2.0% (50KHz)
1	0	0	: +/- 1.0% (20KHz)
1	0	1	: +/- 1.5% (20KHz)
1	1	0	: +/- 2.0% (20KHz)
1	1	1	: +/- 2.5% (20KHz)

OSC.



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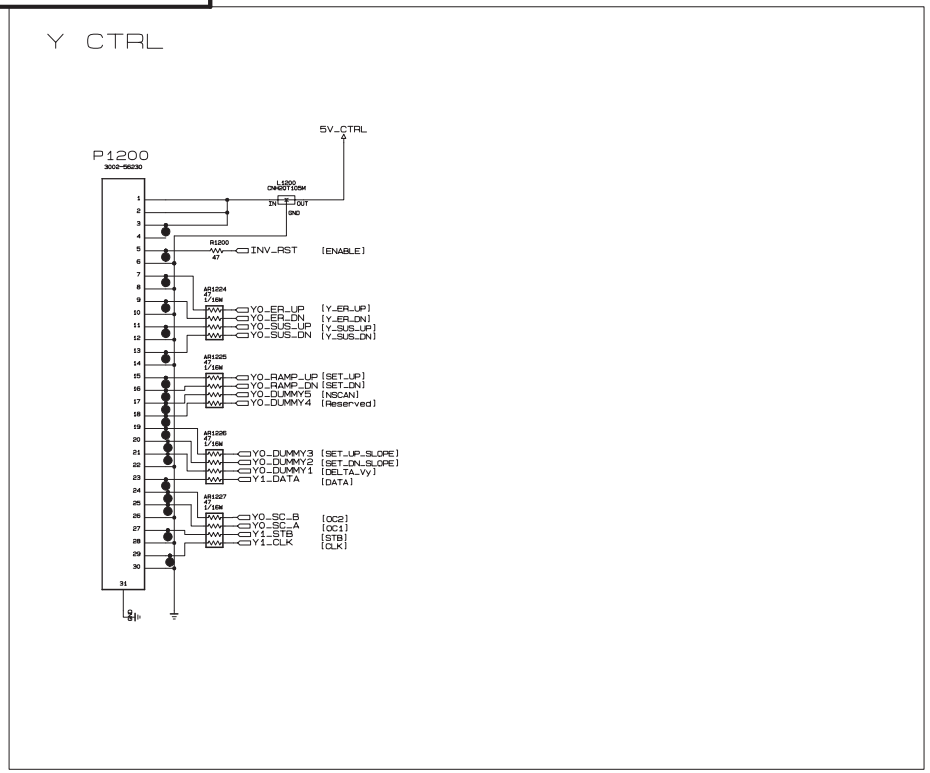
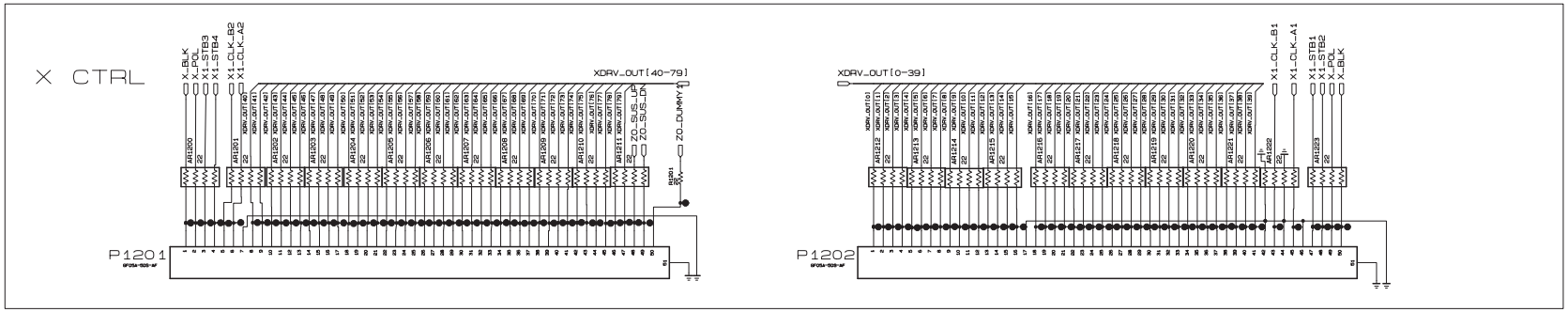
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	4007_CTRL	SHEET	10 / 12

EAX50588103
MSTAR H5 32PC5

Y CTRL



X CTRL



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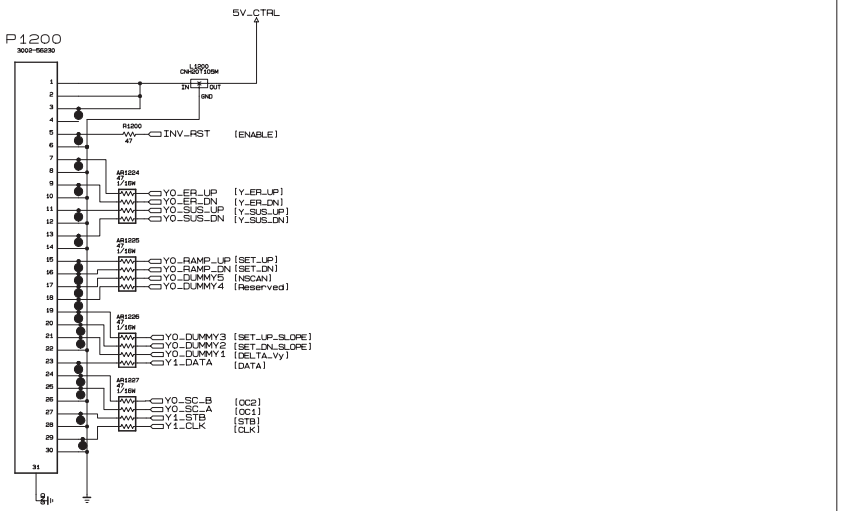
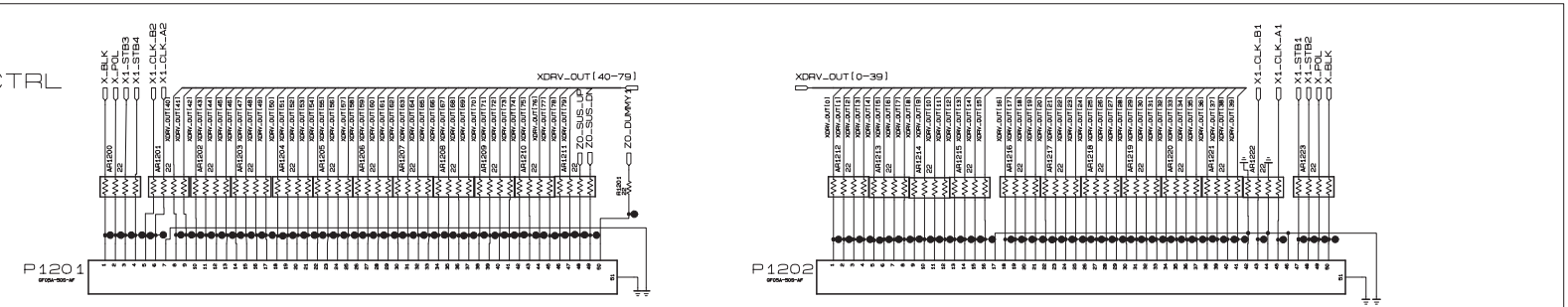
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	X Y CTRL	SHEET	12 / 12

EAX50588103
MSTAR H5 32PC5

Y CTRL



X CTRL



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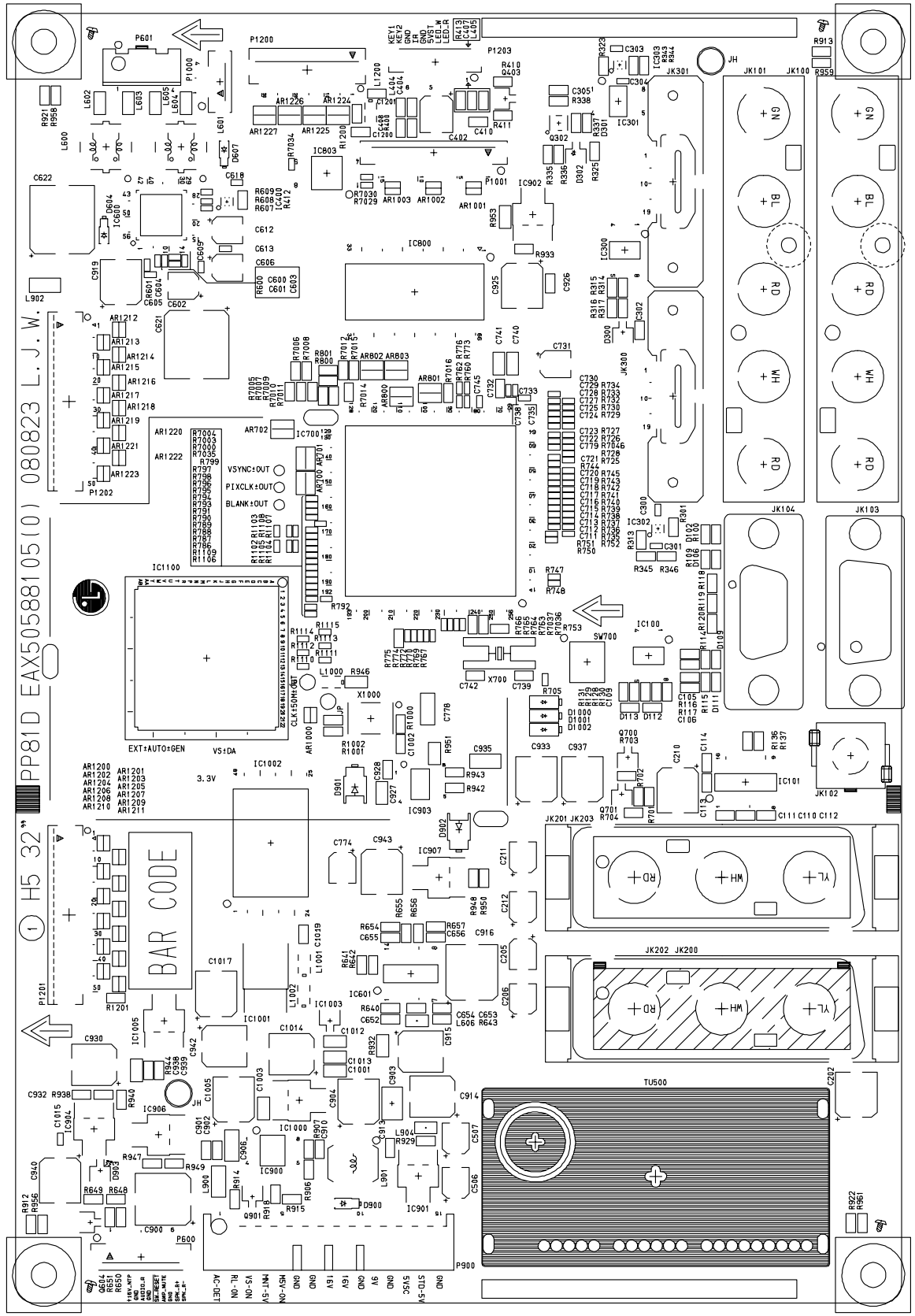
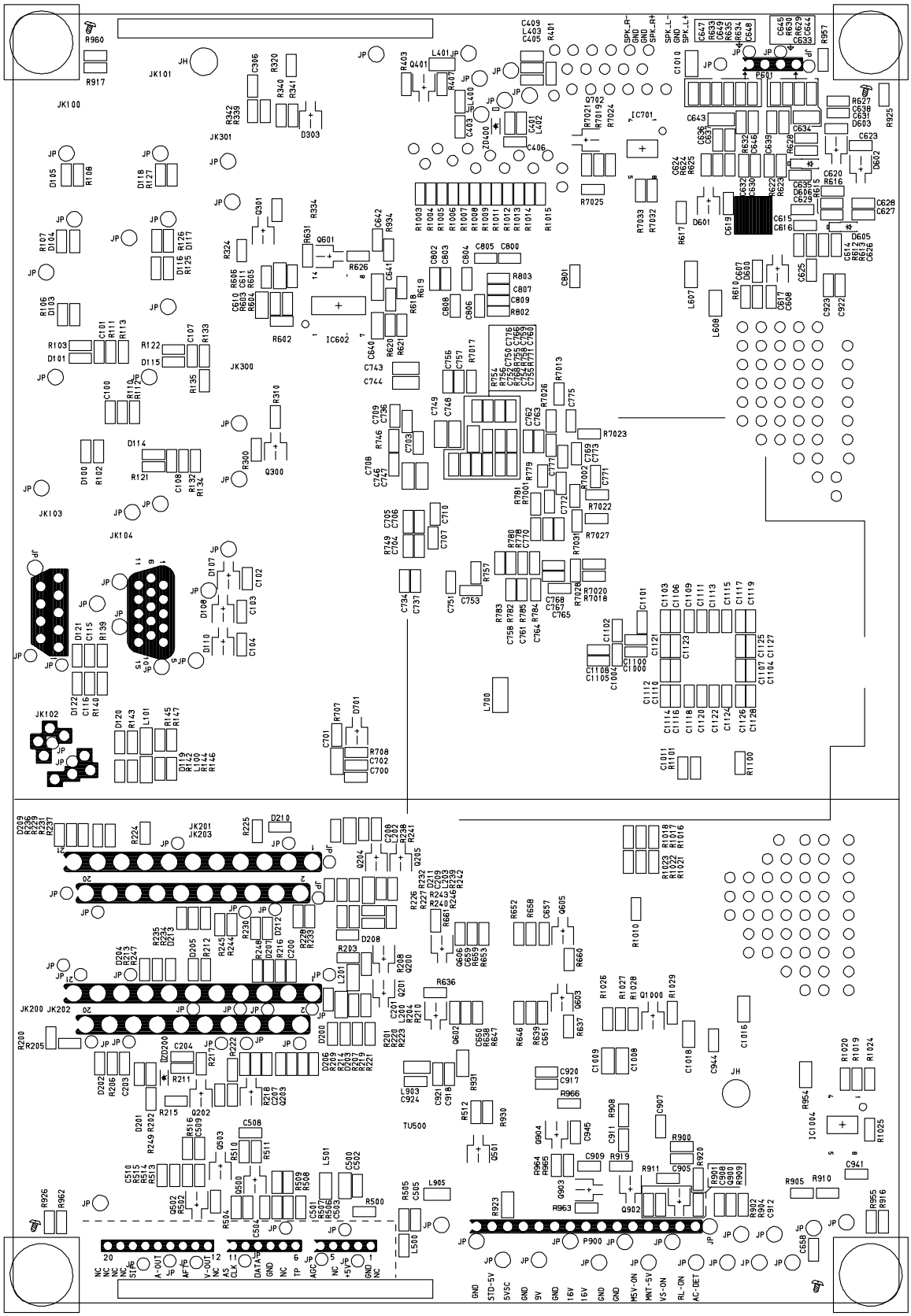
MODEL	MSTAR 32 PDP	DATE	2008/05/08
BLOCK	X Y CTRL	SHEET	12 / 12

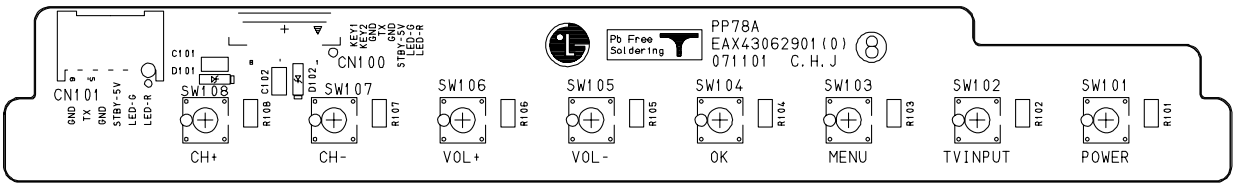
MAIN(TOP)



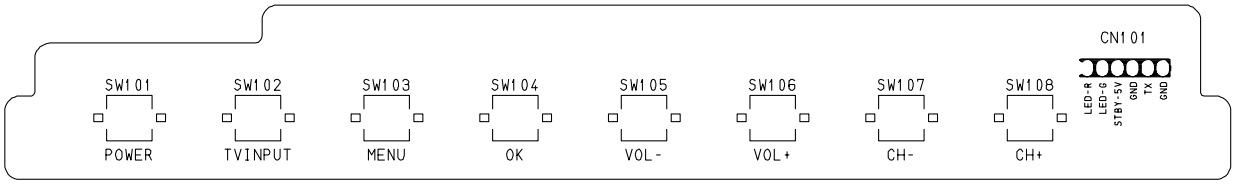
MAIN(BOTTOM)



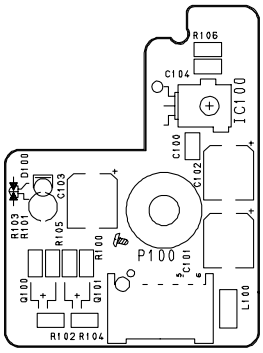
CONTROL(TOP)



CONTROL(BOTTOM)



PRE-AMP(TOP)



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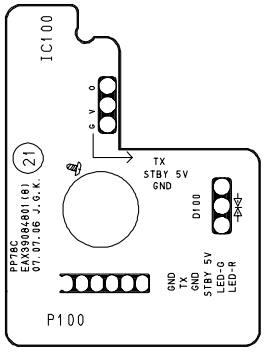

Sep., 2008
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